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OPENING THE TOMB OF PHARAOH

THE MARVELLOUS TOMB OF PHARAOH WONDERFUL BEYOND ALL WORDS

The High Level of Civilisation
that Ancient Egypt Reached
TREASURES OF ART

The first glowing accounts of the marvellous contents of the tomb of Tutankhamen seemed too good to be true, but it would now appear that they did not even do justice to the wonder of the discovery.

To recount the wonderful things that have already been found in the tomb would require many columns, and day-by-day new treasures are being brought to light. First of all the treasures taken out of the tomb was a magnificent inlaid box, itself containing many beautiful things, such as the queen's robes and a black amber necklace. The top of the inlaid box shows the king shooting a lion, and the scene is depicted with marvellous artistic skill.

A Beautiful Casket

The magnificent throne of Tutankhamen has been described by Professor Breasted as "one of the wonders of the world." On its back is a marvellous portrait of the king formed of precious stones ground small on stone wheels and wrought with stone instruments.

Everything goes to show that the treasures in this new tomb represent the work of an art surpassing all artistic work hitherto discovered, and proves that Egyptian civilisation of that date reached, in art at least, a level that more modern civilisations have never attained. Professor Breasted, indeed, affirms that so exquisite is some of the work that it far excels the work of even the greatest Greek, Italian, and French artists.

Lighting an Ancient Palace

And the discoveries, too, throw much-needed light on the conditions under which the Pharaohs lived domestically. They show us, for example, how they managed to light their palaces at night. How was it done? Till now we have not known. But three candlesticks, found in perfect condition, tell the story. They are of bronze, with gold and ivory ornamentation. The wicks are of twisted linen, fastened by metal bands to the stands.

Then, again, it is hoped that the robes of the king will be disclosed. As the queen's robes have already been found in one box it is hoped that a second box may contain the king's robes. The queen's are made of a dainty, transparent bead-net material, and, though it was known that this material was used, the new discovery has given back to the world the first perfect specimen of it.

Another unique specimen is the king's chariot, with body, shafts, and wheels. The wheels are quite small, suggesting that donkeys may have been the royal animals. The seats are lined with

leather, and their backs are of ebony, ornamented with precious stones.

The wands of office found under gilt royal couches in the antechamber are among the most notable examples of art work ever recovered from antiquity. At the top they have solid gold ornaments with filigree work. Tiny golden

balls are worked into a diamond pattern. In short, the discoveries are a startling revelation of the luxurious splendour of ancient Egypt and of the perfection of its art. Of one of the artists a great expert has said that he must have been a master artist of all time, one of the greatest craftsmen the world has ever known.

Climbing to the Top of Australia



We do not generally think of mountain-climbing in connection with Australia, which is a very flat continent, but there are mountains even in Australia, and this intrepid lady climber is making a perilous ascent at a place where iron staples have been driven into the rock for safety.

ACROSS THE LAST SLAVE ROUTE

THE exploration of Africa has seemed so complete that many people will be surprised to hear there is still a slave route that has never been brought under observation. It is in the Libyan Desert, between Kufra and Tibesti, where Egypt meets French Africa.

There native life, with the use of slaves, has been going on unnoticed by the world outside the deserts. Now it is to be explored, and the traveller who has undertaken the journey is Ahmed Hassanein Bey, the Egyptian who accompanied Mrs. Rosita Forbes in her

adventurous journey to Kufra a year or two ago, as described in the C.N.

The Bey calculates that his desert journey from Sollum, on the Egyptian coast, to El Obeid, in Kordofan, beyond Khartoum, will take him six months, and he will travel 2200 miles, chiefly by camel. Four hundred miles will be through deserts that have never been traversed by scientific observers.

The traveller hopes to learn more about the Mohammedan community known as the Senussi, whose elusiveness has puzzled Europeans and Egyptians.

AFRICAN CHIEF IN TOWN

WHY HE CAME TO
ENGLAND

Seeking Justice for Swaziland
and Its People

A LAND OF GOOD CHANCES

The visit to London of Sobhuza, the paramount chief of Swaziland, ought to command the sympathy of the British nation. He has come to claim for the natives their own government in accordance with arrangements made with them in the past, and firm possession by the Swazis of the lands belonging to them from distant times.

The Swazis are a race akin to the Zulus. They have always been on friendly terms with the British, and it is our duty, in accordance with our customary treatment of native races, to hear their complaints sympathetically and give them our protection.

A Rich Grazing Country

There has been trouble in Swaziland for many years owing to the attempts of white men to take advantage of the natives because theirs is a land with good opportunities. The Boers sought to bring it under their government, but it has remained, by the wishes of its people, a protectorate under the British flag.

Unfortunately, Swaziland chiefs in the past have been unwise in selling concessions to men who were on the look-out for good chances. The land is a rich grazing country in some parts, and it has tin and gold and coal. Under these circumstances it is likely that inexperienced natives will concede rights which they do not fully understand. Indeed, it has been done to such an extent that inquiries by a commission have had to be made in the past, and the British Government, after expropriating concessions and monopolies conferring exclusive rights and granting compensation out of loans raised for the purpose, has had to keep the power of revision in its own hands.

The Appeal to London

Sobhuza, who is now barely 21 years old, was chosen as paramount chief while he was still a youth, and was educated at a school for natives at Zambode, established by the Government. If he thinks his people are losing their hold of their native land unfairly he does well to make his appeal direct to the British Government. Close touch has been kept with Swaziland by British officials and educators, and there is enough knowledge of the country in Whitehall to make it easy to see that justice is done and that the rights of the Swazis are properly safeguarded.

The people are to a large extent pastoral. There are enough cattle and sheep in the country to average two cows and two sheep for every man, woman, and child.

GROUPING THE RAILWAYS

NEW BRITISH SYSTEMS

Linking up the Lines of the Country

BIG CHANGES OF THE NEW YEAR

The grouping of the railways of Great Britain into four great systems may be said to have been almost completed on January 1, 1923, by arrangement among the existing companies. A special Amalgamation Tribunal will have to suggest fair terms for any remaining differences left unsettled.

The changes in practical working that will follow the grouping of the railways into four systems will not necessarily be completed before July, so that the public effects of amalgamation cannot be fully judged until that date.

The following are the four great groups of British railways.

The Southern Group, which unites the South Eastern and London, Chatham, and Dover Lines with the London, Brighton, and South Coast, and the London and South Western. Its total mileage is 2129.

One Unchanged Name

The Great Western Group, the only railway that retains its name unaltered, includes all the railways south of the Thames that are not included in the Southern Railway, with the railways north of the Thames that now belong to the Great Western, and also the South Wales lines, totalling altogether 26 railways, with 3765 mileage. Its headquarters remain at Paddington.

The London, Midland, and Scottish Group absorbs the London and North-Western, the Midland, the Lancashire and Yorkshire, and the western Scottish railways. The group covers 7464 miles of route, and will be managed from Euston.

The London and North Eastern Group includes the Great Eastern, Great Northern, Great Central, Hull and Barnsley, North-Eastern, and eastern Scottish railways, that is the North British and the Great North of Scotland. The mileage is 6464, and Marylebone is the working headquarters.

Many Railways in Four Groups

The chief effects of these great changes ought to be much greater travelling convenience for the public, through lines being worked in unison instead of rivalry; and, for the railways themselves, a large saving in management. Railways are very much like other business concerns. A number of small lines are far more costly to run than one big organisation.

One of the effects of the grouping of the railways is that though money has been invested by the public in about 300 different railway stocks, the number of stocks left after the combinations are complete will be only 34.

Into the four groups 120 railway companies are absorbed, and the number of railway directors, it is expected, will be reduced from about 1300 to 100. Sir Eric Geddes, who was active in promoting the scheme when he was Minister of Transport, expressed the opinion that £20,000,000 a year might be saved by it.

TALKING FOR THE GRAMOPHONE

An American company has put on the market blank gramophone record discs upon which the purchaser can record anything he likes by simply singing or talking into the horn.

A BOLD EXPLORER

Finder of a Goldfield in Australia

BIRDS AS SOWERS OF COTTON SEEDS

A great Australian explorer, David Lindsay, has died at Port Darwin.

In 1888 he accomplished the remarkable feat of riding right across Australia from north to south, accompanied only by a small black boy. During the next two years he explored and prospected in the MacDonnell Ranges of Central Australia, and in 1891, as leader of a scientific exploring expedition, he succeeded in crossing in 35 days the great Victorian Desert—a trip of 550 miles.

On this occasion he took 40 camels with him, and carried only between seven and eight gallons of water to supply each camel. A camel requires to drink only every three or four days, and can carry a gallon and a half of water in its stomach; but eight gallons for each was a very small water supply, and the camels must have been almost exhausted at the end of the journey. During his trip Lindsay discovered and reported on the great goldfield of Western Australia.

Enriching the World

In 1913 Lindsay continued his explorations in the Northern Territory, and two years ago he reported that he had found large tracts of land which could be used to grow crops or to feed cattle. He also stated that birds had carried cotton seeds into these parts, so that cotton was already growing wild.

That was almost as interesting and as important a discovery as a goldmine, for, if birds can sow and grow cotton there, men can do the same. At present only a little cotton is being grown in Australia, but the more cotton Australia can grow the better, for the boll weevil in America, and the high wages there, have greatly reduced the supply of American cotton, on which the world has hitherto chiefly depended.

So it is that explorers not only enlarge the world, but enrich it, too.

THE SOUL OF IRELAND

A Great Voice Appeals To It

A PROUD POET TO HIS COUNTRYMEN

Friends of Ireland all the world over have been longing to hear, from the midst of its troubles and cruelties, the true voice of its people pleading, constantly and clearly, for all that is best in the world, that is, for real freedom and kindness and forgiveness.

The voice is heard now from Mr. George Russell, one of Ireland's truest poets. Appealing to the Irish Republicans to change the methods by which they seek to get their own way he says:

I do not like to think of you as being defeated by aught except the best in yourselves, or as to be allured by offer of employment or a share in the power of government. I prefer to imagine you as retiring generously from a civil conflict whose continuance you realise would be disastrous to the nation.

I would like to imagine you, with no lessened love for Ireland, attempting by patriotic activities of another character to make a new conquest over the Irish mind. There is no dishonour in raising the conflict from the physical to the intellectual plane, for it is there the only victories which do not leave the spirit desolate and bankrupt can be won.

How true it is! Murder and outrage and brute force can never win any victory worth having. Those who cannot see that truth, are unfit to govern any nation. They stand self-condemned before man and God.

BOOKS TO PAY THE WAR BILL

Italy's Good Bargain

FILLING UP GAPS IN HER LIBRARIES

Italy has struck a bargain with Germany which is at once a credit to Italy and a compliment to Germany. She has agreed, subject to the approval of the Reparations Commission, to take a portion of the reparations due to her in the form of books and scientific publications to the value of 4,000,000 gold marks.

During the war the purchase of German publications completely ceased, and so Italy has great gaps in her public libraries and book collections. All these gaps have been carefully catalogued by Italian librarians, and a complete list of the books and documents will be presented to Germany, so that she may provide them. This means that Germany will have to procure hundreds of thousands of books, documents, and periodicals; but at the same time the arrangement is a compliment to Germany, for it shows that Italy values German intellectual work, and it is a credit to Italy, for it shows that Italy has a wise appreciation of the international character of science and literature.

It seems an especially desirable form of reparation, as it in no ways interferes or competes with Italy's native industries—not even with her own literary and scientific industries—and will doubtless stimulate and promote her own intellectual development and progress.

If France could discover some equally good form of reparation, what a blessing it might be for us all!

WONDER ROOMS

Scientific Marvels Shown to All

FINE EXHIBITION FOR THE HOSPITALS

It is a pity that the Wonder Rooms of King's College, London, organised for the help of the London hospitals, could not remain open for ever. Wonder rooms, indeed, they were.

In one room was a large machine for making electric sparks. The operator touched one of the terminals of the machine and held his hand above your head, whereupon your hair immediately stood on end.

In another room were beautifully coloured electric tubes, some containing butterflies or jewels which continued to glow even after the electric power was turned off.

There were all sorts of optical illusions, including a mirage with the appearance of a lake in the desert, and even having the reflections of palm-trees in it. There was the illusion of the "unbidden guest" at a dinner party, and an apparatus which enables anyone to look through a brick.

In another room in this magician's palace was found a sensitive flame which jumped and vibrated when you spoke to it. There was also an "ultra-microscope" which showed how the particles moved about in a solution of ink.

In the chemistry part of the exhibition a smiling demonstrator invited us to look through a microscope while he dropped a spot of liquid on to the slide, and we saw it swirl about for a few seconds, after which beautiful crystals began to form.

THE CRYING ROOM

A Los Angeles cinema house has installed a sound-proof "crying room," well stocked with toys, where people who have trouble with their babies may retire until they quieten down.

THE ASTRONOMER'S TRICK

Finding How Far Away the Stars Are

STEPS FORWARD IN THE SCIENCE OF THE SKY

When the Royal Astronomical Society celebrated its hundredth birthday a few months ago, the President mentioned six great landmarks that had occurred in the history of astronomy during the society's hundred years.

Professor Turner later took these landmarks as topics for his six Christmas lectures in the historic lecture theatre of the Royal Institution. "The rising generation," he says, "should know about these steps forward, and why they are great."

In the first lecture Professor Turner talked about the distances of the stars and how they are measured. He explained that the ancient astronomers thought the stars were fixed simply because, with their crude instruments, they were unable to record the extremely small movements which take place.

"The most important method of measuring the distances of the stars," the professor said, "depends on the principle used by one of Napoleon's generals when he wanted to know the breadth of a river without crossing it. Here is a long mirror which we will use to represent the river, and here is a doll, which will do for Napoleon's general."

The lecturer then showed that if the general pointed his arm to the opposite bank of the river, and then swung round, keeping his arm stiff, until he was pointing toward some point on his own side of the river, the breadth of the river was the same as his distance from the new place toward which he was pointing.

General as a Base Line

In Napoleon's case the general himself was the "base-line," as it is called. For the stars the base-line we use is the distance from the Earth to the Sun, and so it is important that this distance should be accurately known. One of the ways of measuring it was by observing Venus when it crossed the face of the Sun. "This method," the professor said, "did not give perfect results, because Venus is surrounded by a fuzzy atmosphere, and to illustrate this I will ask three of you to measure the height of this young lady. Her hair is fuzzy, like the atmosphere of Venus, and you will see that you do not get the same height in each case."

In conclusion, Professor Turner mentioned that some stars are so far away that no ordinary method would give their distance for us. Sometimes, as a last hope, we are able to resort to a trick. "When we can see that the stars in a cluster are all varying in brightness," he said, "we can estimate their distance from us, just as, when we see a pendulum swinging at a certain speed, we can estimate its length."

MUD VOLCANOES

The Oil Fields of Peru

A vivid picture of the oil districts of Peru has been given by Dr. T. O. Bosworth in a new book about the petroleum fields of that country.

The presence of oil is often known by patches of smooth, oily water, which can be seen from the cliffs by the sea. Sometimes the sand smells strongly of petroleum. Mud volcanoes occur here and there—little mounds of mud a few feet high, and perhaps ten or twenty feet across, with craters from which comes a small flow of muddy water, with a little oil and gas.

Inland, in the desert, the oil may be recognised by what is known as puff sand. Patches of sand are stained brown by the residue left by oil that has oozed through; when one walks through the puff sand it breaks up and rises like a thick cloud of heavy dust. The dust smells strongly of oil.

MEASURING THE SUNSHINE

THE TELL-TALE BALL OF GLASS

How the Sun is Made to Write Its Own Record

THE CHARRED LINE ACROSS THE CARD

By Our Weather Correspondent

One of the most interesting weather records which it is possible to make is to keep account of the time during which the Sun is shining.

Every day we see in the newspapers statements showing the number of hours of bright sunshine at several of the best-known holiday resorts. These give a very good idea as to what parts of the country had bright and sunny weather on the previous day and where it was dull and cloudy.

It would, of course, be possible if one had nothing else to do to sit with notebook in hand and jot down the time whenever the Sun appeared or disappeared among the clouds; but it is easier and cheaper to make the sunshine record itself.

The First Sunshine Recorder

The first instrument ever invented for recording the amount of sunshine was very ingenious. It consisted of a hollow wooden bowl. Over this was placed a glass ball about four inches in diameter, held in position by a couple of metal clamps.

This ball was so placed that when the bowl was exposed to the Sun the rays of light which passed through it were focussed on the bottom of the bowl and burned a black charred mark upon it. As the Sun passed on its course through the heavens the charred mark moved farther along the bottom of the bowl, and if the sunshine were continuous it left an unbroken black line.

Whenever the Sun went behind a cloud the black line was broken, and by examining it one could count how many hours during the day had been sunny and how many cloudy.

Behind the Glass Ball

As the height of the Sun above the horizon changes slightly from day to day, becoming higher in spring and lower in autumn, each successive day's record was a little lower or higher on the bowl than that of the day before. On this account the instrument could be left in position for many months, and the records of every day would be separate lines one above the other.

Modern sunshine recorders are considerably improved. Instead of the clumsy device of a wooden bowl a strip of cardboard, chemically treated so that it will char evenly without catching fire, is fixed in a metal groove behind the glass ball. On this strip lines are marked to show the hours. A very exact trace can thus be made which can be slipped out and preserved, a new, clean card being exposed each day.

A Wonderful Record

One of the most remarkable records ever taken with an instrument of this kind was brought home from Captain Scott's famous expedition to the Antarctic. Beyond the Antarctic circle the Sun remains above the horizon day and night during the summer months, and it was necessary to take a specially designed sunshine recorder to cope with these unusual conditions.

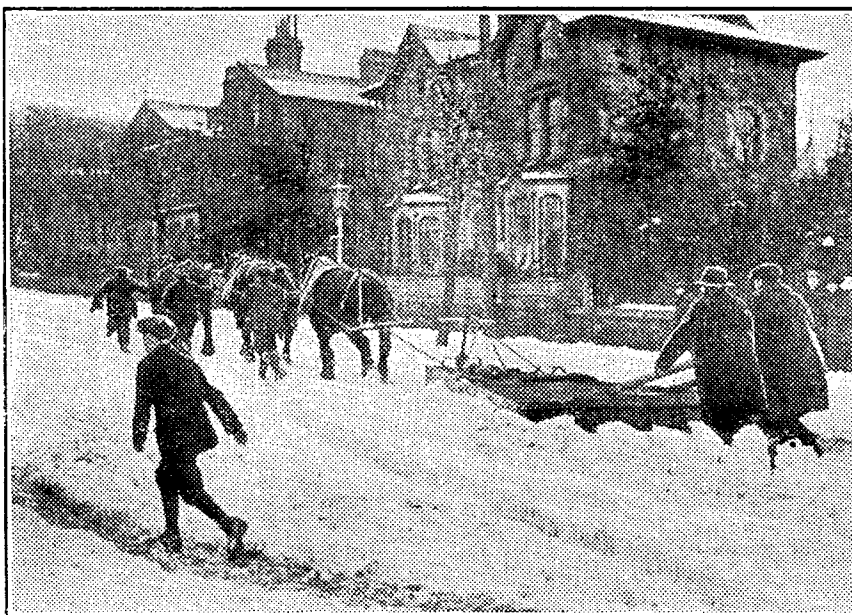
The record in question showed an unbroken charred line covering, in all, 60 hours 25 minutes, or more than two and a half complete days and nights.

Records of sunshine are of very great importance in the study of climate. In England the amount of sunshine is much greater on the south coast than in any other part, thus accounting for the great popularity and healthfulness of south coast holiday resorts.

WINTER IN THE ENGLISH HILLS



Two little playmates take their first toboggan run



The snow plough at work clearing the streets



A motor-car held up by the snow.



A spill at the end of a fine toboggan run



The nursemaid finds the streets almost impassable

Some parts of England have been having a spell of real winter, as can be seen by these photographs, taken at Buxton after a blizzard which filled the streets with snow and made traffic almost impossible

ANIMALS THAT LEARN

ZOO SECRETARY'S EXPERIMENT

Why is a Monkey Afraid of a Snake?

INSTINCT AND EXPERIENCE

By a South Kensington Correspondent

For many years Dr. Chalmers Mitchell, Secretary of the Zoological Society, has made experiments with the object of proving which animals show fear of the larger snakes.

He had found that most, if not all, were quite indifferent to their presence. The animals which clearly demonstrated fear or a very great dislike of these reptiles were several species of parrots and the monkeys and apes. Among the apes the slow-moving, sluggish orang-utans gave an exhibition of astonishing agility by rapidly clambering out of the way on being confronted by a snake.

Yet recently a very young ape arrived at the Zoo—it seemed quite a baby—and when a snake was brought near it it not only showed no sign of fear, but began to play with the reptile.

Monkey's Likes and Dislikes

From these facts Dr. Chalmers Mitchell is inclined to conclude that the fear shown by the parrots, monkeys, and apes in his earlier experiments was not brought about by instinct, but that their action was based on experience, and that in all probability they had in their early life, before coming to the Zoo, actually encountered snakes, whereas the baby ape, knowing nothing of their ways, greeted a snake fearlessly.

All this bears a close analogy to some experiments made by Dr. Carpenter in Nyasaland during the war, when he was stationed there with the Medical Service. He wanted to find out which insects were unpalatable to monkeys.

In the first place the monkey used by Dr. Carpenter was full-grown, and definitely exhibited its likes and dislikes.

All those insects that are supposed to show what are called warning colours—those with vivid red and yellow markings—were either ignored by the monkey or seized and thrown away. Then, when taken out on a lead into the bush to hunt insects for itself, it never attempted to catch the objectionable ones, but seized and gobbled up large locusts and others that it liked.

The Wasp that Stung

In the second place, Dr. Carpenter experimented with a baby monkey which had just left its mother. Here he obtained definite proof that monkeys, being animals of a relatively high intelligence, are actuated by experience more than by instinct. For this baby monkey did not know that a wasp could sting, but, once having been stung, it never attempted to eat another.

And so on through all the other insects, till it learned that those of vivid yellow or red markings, or those having an unpleasant odour, were not nice to eat. Having learned its lesson, the little monkey when given an unpleasant insect either gingerly rolled it in the sand, rapidly seized it and tore it up, or quickly hurled it away.

And, in the same way, it is due to our own experience that the stinging-nettle is probably the best-known plant in the countryside.

In the Auction Rooms

The following prices have lately been paid in the auction rooms for objects of interest:

3 panels of Flemish tapestries . . .	£1417
A Gainsborough portrait . . .	£819
A panel of Brussels tapestry . . .	£703
Old Worcester dessert service . . .	£241
Pair of Chippendale armchairs . . .	£157
Portrait by Sir P. Lely . . .	£120

FLY THAT SPOILS YOUR BOOTS

PEST THAT IS WORRYING FARMERS & SHOEMAKERS

Menace to the Leather Trade

CALL TO A NEW WAR

By Our Country Correspondent

There is a call to a new war, and this time it is a good war.

The enemy is the warble-fly, or, as it is sometimes called, the ox-warble, which preys upon cattle, and not only hurts the beast but spoils its milk, its flesh, and its skin. The result is that the farmer, the dairyman, the butcher, the shoemaker, and the public all suffer.

The pest seems to be on the increase, and so serious a menace has it become that the question of a great campaign against it was raised at the last Shoe and Leather Fair held in London.

The Real Culprit

The warble-fly is responsible for a very large percentage of the inferior skins that come into the market, and there is no doubt that the innocent shoemaker is sometimes blamed for the insect's depredations. A call is to be made to the farmers all over the country to carry on an energetic campaign against the pest, for it is believed that if this were done the fly could be practically exterminated.

Its life-story is a strange one. The fly lays its eggs on the hair of the ox, usually just above the hoofs, and there they hatch out. The animal feels the irritation, licks the leg, and swallows the grubs, which lodge in its gullet and then cast their skins.

They then worm their way along the animal's back between the muscles, and lodge immediately below the hide, where they moult once again and become shiny. They cause much irritation to the animal, a swelling rises in the flesh, and soon the skin of the ox is perforated.

Fly that Frightens Cattle

The spiracles, or breathing tubes, of the grub are placed close to this opening, and the animal's flesh becomes inflamed. The grub feeds on the animal, moults once more, and then makes its way out and falls to the ground, where it becomes a pupa, and a few weeks later changes into a fly to begin the strange life story all over again.

It is in the summer and autumn that the creature does its fell but unseen work under the skin of the ox, and the Ministry of Agriculture declares that the damage done to cattle is enormous.

Both the adult flies and the grubs do the damage. The flies, when on the wing and on the look-out for a host on which to deposit their eggs, frighten the animals and cause them to gallop about, which spoils their milk, reduces its quantity, and injures the cows.

Protecting the Cows

The grubs perforate the hide in many places, the flesh is spoilt so that much of the meat has to be cut away, and in a year hundreds of thousands of pounds are lost all through the work of this detestable fly.

By giving cows plenty of shelter in hot weather, and allowing them to enter ponds and streams, much good may be done. Then by greasing the cow's legs with a strong smelling oil, the flies can be prevented from laying their eggs there.

The warble-fly is as great a pest in America as it is here, and there is no doubt that if the quality of our leather is to be preserved the warble-fly will have to be wiped out.

A MILLION POUNDS AN OUNCE

IS RADIUM GROWING CHEAPER?

Price List of Some of the Rarest Things on Earth

£400,000,000 A TON FOR DIAMONDS

Radium is gradually becoming cheaper, or perhaps we should say less expensive.

Little by little the common stock of this rare element is being increased. The newest discovery is a very rich deposit of ore in the Belgian Congo.

How strange it is that the most precious substance ever known to man should be lying all this time unsuspected beneath the feet of naked savages.

If they knew its worth, and how to extract it from its ore, radium would make the pygmies of the Congo the richest men on Earth.

Helping the Crops

But when we speak of radium as growing cheaper, we are still left amazed, for even now radium costs a million pounds an ounce! What must have been its price when it was dear!

It is because radium is so new to science and is so difficult to get that its cost is so high. There are said to be only four ounces recovered so far. Yet it is working for us day and night. Its emanation (helium gas) forms part of every draught of air we breathe. It is constantly labouring for us to form nitrogen in the atmosphere, and so to fertilise our crops.

The known quantity of radium emanation in the air represents hundreds of tons of pure radium in our rocks and soil, yet we toil with frenzied energy to secure the tiny particle of radium existing in ten million times its bulk of ore.

Last year, in the course of an address to the members of the Iron and Steel Institute, Sir Robert Hadfield drew a picture of the wonders that might be wrought by indebted nations if only a considerable mass of radium could be brought to light.

Things that Cost a Fortune

Dealing with these bewildering figures, he went on to lay out a price list of the world's most costly commodities. Radium, of course, stands alone, but other figures, though market fluctuations have varied them in the course of a year, were very impressive.

Here are some of them as they stood in 1921:

Diamonds	£400,000,000 a ton
Platinum	£795,000 a ton
Gold	£208,000 a ton
Silver	£6000 a ton

Rates have altered since this stupendous list was unfolded to the Iron and Steel Institute, but the ratio of values remains the same.

It is obvious that it is not often the most useful product which commands the highest price. Indeed, Sir Robert Hadfield declares that mankind, in dealing with its treasures, places the highest value on those less generally useful. Coal and diamonds, both exactly the same element though different in combination, represent the extreme example of varying prices.

Abundance Means Cheapness

Of course, if radium and gold and diamonds were abundant everywhere, and coal and pig-iron and wheat scarce, then the scale would incline in the opposite direction.

If there were no motor-cars but Fords, rich men would pay £10,000 each for them. But they are the most numerous cars in the world, and hence cheap.

If only one copy a week of the C.N. were printed, a fortune would be needed to buy it; but it is produced in hundreds of thousands, so its price is twopenny.

When radium can be gained from the earth with equal facility it will be no dearer than gold or silver.

IMMORTAL MAN'S THUMB-PRINT

Did the Great Leonardo Smudge His Picture?

QUEER TEST FOR A PAINTING

A lady of New York believes herself a proud possessor of a painting by the great Leonardo da Vinci, and is suing Sir Joseph Duveen for £100,000 because he depreciated the value of the painting by denying its authenticity.

To prove that the picture was really by Leonardo da Vinci the lady relies upon a thumb-print left on the picture by the artist. Da Vinci like other artists, sometimes smudged and flattened out the wet paint with his thumb in order to obtain effects that a brush could not produce; his thumb-prints are to be found on other pictures undoubtedly painted by him. The thumb-print on this picture is to be magnified and photographed, and compared with the thumb-prints on the other pictures.

Criminals, as we know, are often identified by their thumb-prints; but is not this the first time that a thumb-print has been used to identify an artist?

Little could the great Leonardo da Vinci think, as he smudged the wet paint with his thumb 400 years ago, that the print might some day be worth a fortune to a lady in the new country which had just been discovered far across the ocean by Columbus.

ST. STEPHEN'S TOMB

Has It Been Found?

The Agricultural School of Caphar Gamala, a village near Jerusalem, has been conducting excavations for some time, and it is reported that there has now been discovered in a courtyard near the school the tomb of St. Stephen, the first Christian martyr.

St. Stephen was one of the greatest figures of early Christianity. He was one of the seven deacons appointed to look after the needy in the Jerusalem community, and he is said to have been "full of faith and of the Holy Spirit"; but the Jews regarded his preaching of the Messiah as "blasphemous against Moses and against God"; "the people, and the elders, and the scribes were roused against him," and he was charged before the Sanhedrin for speaking "against the Temple and the Law." The Sanhedrin found him guilty, and he was stoned to death.

In the Acts of the Apostles we are told that "devout men carried Stephen to his burial, and made great lamentation over him," but the place of his burial is not mentioned. There was a legend, however, that Gamaliel rescued his body and buried it in the Gamaliel tomb at Caphar Gamala, and it may be that there was truth in the legend and that the tomb now discovered is actually the tomb of the first Christian martyr.

THE GREAT GALE

Extraordinary Things the Wind Did

The New Year dawned with one of the most tempestuous seas in the memory of man.

Trees were uprooted, trains derailed, great liners tossed like cockleshells, and five ships were reported lost. In Ireland a train was blown off the railway; at sea an officer was blown off his ship.

The Cunard liner Caronia arrived three days late without her wireless and with three ports blown in. The French liner Savoie, two days late, lost her wireless apparatus three times, and in the saloon a grand piano broke loose and endangered the lives of the passengers as it crashed up and down the saloon. The captain reported that "the seas smashed us like massed artillery," and one lady was so terrified that her hair turned white! The waves are said to have been ninety feet high, and if that be true they were the highest waves ever recorded.

THE MAMMOTH RELICS OF AN ANCIENT BRITON

Why the Old Folk Long Ago Gave Him His Name

HUMOUR HIDDEN IN A WORD

Having sent America, years ago, the largest elephant ever seen in captivity, we are now sending her the smallest.

Jumbo, the African giant, whose departure caused a storm of protest long ago, weighed six tons, and measured 11 feet. In America he was said to have grown to 12 feet.

Now we are delivering over to the United States the 36-inch pygmy elephant whose photograph appeared in a recent C.N. after he had had his injured hind leg X-rayed. He goes because Americans have more money to offer for natural curiosities than we in poor England can spare.

When Mammoths Teemed in Britain

Well, we have a sort of consolation in the recent triumph of our Natural History Museum in securing a magnificent skull and tusks of a Siberian mammoth. There is a thrilling suggestion of life still about the relic, for the six-foot tusks surmount a lower jaw to which the flesh and dried skin still adhere.

We ought to find mammoth skulls enough in our own country, for these giants teemed all over Great Britain and Ireland at one time. Indeed, they lasted in Ireland, it is believed, until a period near that at which history begins.

Innumerable remains of our mammoths have been found—it is said that a tusk has just been found at Farnborough, in Kent—but they are reduced to fragments, nothing complete and perfect like this new skull.

The Story of a Word

"What's in a name?" asks Shakespeare. The answer is that when the name is Mammoth there is one of the funniest of all things in it. "Mammoth" comes from a Tartar name, "Mamma," which does not mean mother, but "earth." The Tartars and Russians, finding the remains of mammoths in the earth, thought the animals lived like moles in the soil, burrowing for a living, and so named them after the earth in which their remains were found.

When Europeans first began to record their travels in Russia they had much to tell us of this wonderful animal. There were really three theories. The least common was that the bones and ivory were a vegetable creation, formed in the earth like coal.

But, said those who doubted, how can a vegetable product be filled with congealed blood and marrow? How can flesh belong to vegetation?

Fortunes from Mammoth Ivory

The second theory was based on the finds of actual bodies, bogged in soil which had been frozen marsh for a hundred thousand years.

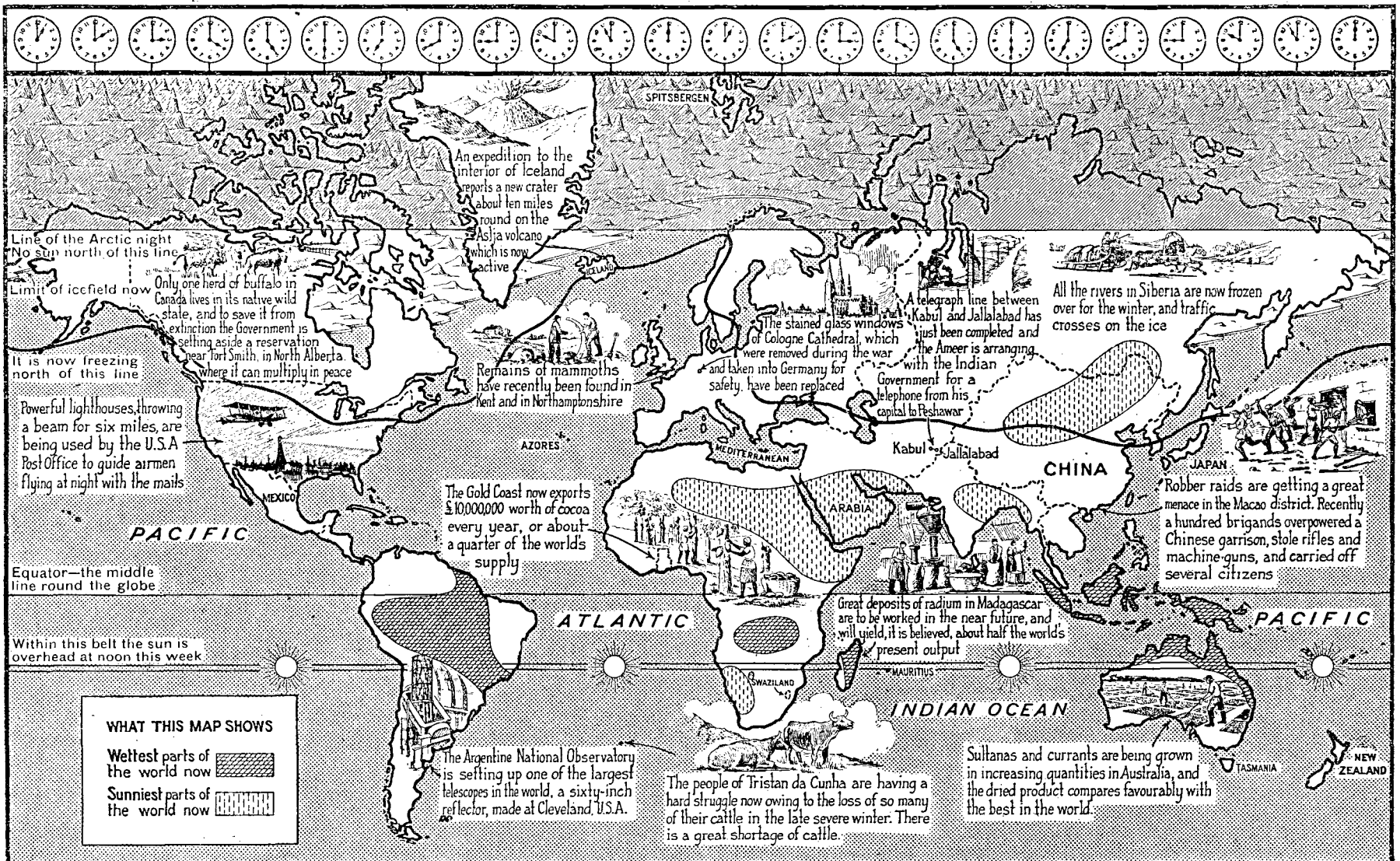
The explanation of the first finders was that the mammoth toiled below ground like the mole, and met its death if its eyes met sunlight. Its tusks, they said, were the excavating tools with which it made its tunnels.

Others turned to the fortieth chapter of Job, and declared that the mammoth was exactly the animal described there.

"Here in the soil of Siberia is Behemoth," they said. "He has been buried here since the Flood."

Since then fortunes have been made from mammoth ivory, but the name, which tells this queer tale remains, and will remain. See World Map

PICTURE-NEWS & TIME MAP SHOWING SUN AND RAIN ALL OVER THE WORLD



THRILLING ADVENTURE Miraculous Escape in a Pit Shaft BOYS RESCUED IN A BASKET

Two pit lads at Pontefract have had a marvellous escape from death.

The cage in which they were being drawn up to the surface collided with a descending cage. The cable of their cage broke, and it started to fall down the 1200-feet deep shaft. It seemed as if the lads must inevitably be dashed to pieces, but, by a lucky chance, the cage jammed after it had fallen a few hundred feet down the shaft.

The shock rendered the lads unconscious, and when they recovered consciousness they found themselves in a terrible plight. The cage was jammed, but any moment it might slip and crash to the bottom, and meantime nuts and bolts which had been loosened above came pelting down on the cage.

In despair the boys clambered out of the cage and made their way to a beam across the pit. There they remained standing for four hours, drenched with water which ran down the sides of the pit, and shaking with fear and cold. At last down came two men in a basket, and the boys were rescued and drawn up to daylight again.

It was a miraculous escape, for ninety-nine times out of a hundred a cage drops to the bottom of a pit if its cable breaks.

Pronunciations in This Paper

Auriga	Aw-ri-gah
Da Vinci	Dah Veen-chee
Gamaliel	Gah-may-le-el
Khartoum	Kar-toom
Mosul	Mo-sool
Nineveh	Nin-e-ve
Orion	O-ri-on
Pompeii	Pom-pay-ye
Sanhedrin	San-he-drin
Sennacherib	Sen-nak-e-rib

A HUNTER AND A LION Bravery in Man and Beast

It is natural for men to pay admiring tribute to their fellow men who are brave, but in fairness they should equally recognise the bravery of animals that are ready to die for love of their mates and love of liberty.

A hunter's story from Kenyaland gives a suitable illustration. The hunter was out after lions, and wounded a male animal. Undaunted by the mysterious power of the rifle, the wounded lion's mate immediately charged home and, heedless of a bullet in her throat, reached the hunter and bore him to the earth.

The rifle he thrust into her throat was snapped in two, and the hunter was picked up and shaken as a dog shakes a rat, before the brave beast fell dying through loss of blood—just in time for the man to save himself.

The man was brave no doubt, but the lioness was braver. She died, and he lived to tell the story. Let us give honour wherever it is due.

WORSE ENEMY THAN TIME A Beetle Eating Up Wren's Church

Shakespeare accuses Time of "ruinating" proud buildings, and so it does by crumbling the stones, but even worse enemies are the boring beetles that destroy the upholding beams.

They have eaten the roof of Westminster Hall, the oldest of London's spacious structures, and made it necessary to spend a fortune in renewing it. Now it is found that the tower of St. Margaret's Church in Lothbury, which was rebuilt by Sir Christopher Wren in 1690, is unsafe through the beams being worm-eaten.

Steel beams are about to be substituted, and the tower is to be underpinned with concrete.

St. Margaret's, serving seven City parishes, stands over the ancient watercourse where the Wall-brook once entered the River Thames close by the City wall.

SEEN FROM A LONELY LIGHTHOUSE Remarkable Mirage

There is no wilder or more barren spot in Britain than Cape Wrath; and a lighthouse on Cape Wrath, besieged by the fierce Atlantic breakers, must be one of the loneliest spots on the Earth.

Yet even there wonderful and beautiful things sometimes happen; for Mr. Anderson, the lighthouse keeper on the Cape, has sent a Scottish paper an admirable account of a mirage which occurred there one morning in December.

We are accustomed to think of mirages as phenomena of hot desert lands, but they do occasionally occur in northern climes; and the mirage seen by Mr. Anderson was plainly unusually clear and extensive. He describes it in the accurate language of a scientific observer.

It "consisted of the land and sea stretching from Cape Wrath to Dunnet Head being reflected right across the heavens in a southerly direction. To be exact, the point of beginning was from E.S.E. to S., but on reaching south three distinct mirages were seen. All the land and sea was shown to perfection; the entrance to Loch Eribol and other bays reaching along the coast was marvellously clear and plain. In all, the mirage from our point of view appeared exactly in the same position as if one were out at sea in a boat ten miles off looking at the sea and land along the coast of Scotland."

WORLD'S SUNDAY SCHOOLS

In 1924 the Ninth Convention of the World's Sunday School Association, which is organised from the United States, will be held in Glasgow. The Convention was last held in Great Britain a quarter of a century ago.

THREAT TO DROWN A VILLAGE Thirsty Town to Swallow It Up POET'S STONE CHAIR

"Cities with their many-throated thirst threaten each sacred mere," the poet wrote, and now the thirst of a town is threatening to drown a village. The Warrington Corporation is threatening to turn the picturesque little Welsh village of Tregeirog into a reservoir.

Not only has the village 200 inhabitants in cottages of grey stone, but every year there is held there an eisteddfod, and the whole valley is sacred to poetry.

In the near neighbourhood was born Morris, "the Welsh Nightingale," and his stone chair is preserved in a farmhouse garden. To submerge such a picturesque and poetical valley seems almost like drowning Pan, the god of pastures, and the inhabitants are naturally up in arms at the idea.

But, alas, the poetical has to make way for the practical in this world, and some day the people will be drinking water out of the cottage chimneys of Tregeirog. They can at least console themselves with the thought that the great reservoir made by the Great Dam at Assuan submerged one of the most beautiful temples in the world—the temple of Philae.

THE CATERPILLAR CAR Motoring Across the Sahara

The Citroën caterpillar car which started to cross the Sahara Desert from Algiers to Timbuctoo has passed through Inifel, hundreds of miles in the heart of the desert.

It has been following the camel-caravan track which runs along a dry watercourse, where desert bushes and certain kinds of grasses manage to grow. The next halting-place was at In Talah, 260 miles from Inifel.

The first crossing of this desert was made 20 years ago by the Fourreau-Lamy Mission, and took a whole year to accomplish.

Picture on page 12

CHILDREN'S NEWSPAPER

JANUARY 13 1923

Are You Worthy of Your Opportunity?

ARE we cleverer than those who went before us? A correspondent asks the question.

Sometimes we are tempted to think that modern people are much cleverer than the ancients. We have a hundred forms of natural magic placed at our disposal, any one of which would have been regarded as super-human in the days of old, and so we are apt to feel clever.

But it is a mistake to suppose that because we are able to use wonderful things we are any cleverer as individuals than people were in the days of Socrates, or Julius Caesar, or Roger Bacon. The more we examine the records the more we are struck with the fact that the brains of the ancients lacked no quality that we can justly claim.

The truth is that every boy and girl today is the heir of all the ages, and that whatever our ability, much or little, we have the chance to apply it in happier circumstances than ever before. Although we are not really any cleverer than if we had been born in 2000 B.C. or A.D. 600, we come into the world at a time when we can enter into a treasure-house of knowledge built up from the days of prehistoric man.

We can do cleverer things, even if we are not cleverer. We have no right to be proud of the fact as individuals, for we certainly did not invent all our clever things. Little by little the record of human knowledge has been made. Stone by stone the edifice has grown in toil and suffering. To handle a modern scientific device is to have the privilege of profiting by the thought and care of a long line of people cleverer than ourselves.

Once we realise these truths, how thankful we ought to be, and how humble in our thankfulness! Surely we, having the chance to profit by all that the races of men have yet discovered, shall not be unworthy of our heritage of human lore?

Here are books which epitomise all the world's genius. Here are tools and machines which sum up all the mechanical ingenuity of men's minds. Here are conceptions of force and matter which give us more than a glimpse of the nature of the universe. Here are instruments which enable us to plunge our thoughts into space. Here are noble philosophies which lift up the minds of men and make them only a little lower than the angels.

We take up this vast inheritance of power and thought as our very own, with roads opened for us that never existed for the generations of the ancient world. We are no cleverer than they, but we have greater opportunities. *Let us be worthy of them.*



THE EDITOR'S TABLE

Fleetway House, Farringdon Street, London

above the hidden waters of the ancient River Fleet, the cradle of the Journalism of the world



Earning a Living

A PRINCE of Denmark, we are told in the grown-up newspapers, is compelled to earn his living. An excellent thing, for kings and people too.

Thirty-One Flowers

ON the Editor's desk lie 31 varieties of wild and garden flowers, blooming at New Year at Udimore, near Rye, and picked by the children of a Sunday-school in that lovely part of Sussex. So the scents and colours of the country come to town.

What better lesson could the children of a Sunday-school learn or teach than the love of flowers? To gather flowers is to make an anthology of some of the most beautiful thoughts of the Creator, and to study flowers and to know them by name is to be on intimate terms with Beauty. God is Love, and Beauty is His Voice.

The Dumb Who Died

THE animals that died for mankind in the war are to have their memorial, on one of the finest of London sites. Two drinking fountains will commemorate them at Hyde Park Corner.

While there are animals that harm mankind by spreading disease—as the sleeping-sickness fly, the housefly, and the rat—many more are benefactors, some by conscious and some by unconscious helpfulness. The horse, the mule, the camel, the dog, the carrier pigeon are obvious helpers, in war or in peace.

Others that were thrust into dangerous places to detect the danger were the canary, which gauged the impurity of air in confined places; and the goldfish, used as tests for the least traces of poisonous gas in waters that had washed the life-preserving anti-gas helmets.

It is good that they should be honoured and remembered. Though the animals will not understand how their honour is recorded in stone, it will react on their welfare, for it will soften toward them the feelings of generations of mankind.

The Country Folk

SOMEBODY in Parliament has been recalling some figures that are not new, but are very serious for England. They show that, though 39 in every 100 people were working on the land a century ago, only 9 in a 100 work on the land now.

It is true that we are a great manufacturing nation, but the springs of national character have ever risen in the country. In the country John Bull is truly born and bred, and it is not a hopeful prospect to think of the passing away of our country folk.

We hope to see the day when great numbers of our people will go back to the land, and live joyful lives in the peace and beauty of our unmatched countryside.

In the Bus

WHAT are they reading, these people poring over their books in the crowded bus, too engrossed to look up as they take their ticket? Some trashy story, some exciting novel, no doubt.

The other day we took the liberty of looking. A boy from India was poring over *Roman-Dutch Law*, and a girl from Balham (probably) was poring over a *Textbook of Physiology*.

There is hope even in a bus.

Tip-Cat

THEY say that, as a nation, we have got a bad ache in our finance. Sort of empty feeling in our pay-chest.

ACCORDING to a scientist you can tell a man's profession by his eyes. And his calling by his voice, no doubt.

LONDONERS are said to be unmusical. Anyhow, they have not much time for playing.

A CORRESPONDENT asks how to remove the scent of onions. Remove the onions; it is so strong you cannot separate it from them.



PETER PUCK
WANTS
TO KNOW
How long the last
bus lasts

THE sea is eating up the East Coast. You can see the bights all along the shore.

POLITICIANS, it seems, never dress really well. Some are not even clothed in their right minds.

MR. CHESTER-
TON thinks
an oyster may

have a dignity of its own. And, no doubt, some indignity, too, when people begin to eat it.

IN Russia, a musician's pupils often pay him with eggs. An old custom, but it used to be called paying him out.

WE generally take a house, writes a contemporary, with a cool head. Having caught a cold while looking for it?

A POLITICIAN declares that politics are no joke. Yet all the parties seem to be splitting over them.

Heaven

THERE are fourteen words in a new book by Dr. Bashford which we gladly send round the world. They are spoken by a jolly saint whose business is to save all the babies of the world from falling downstairs. He says to a little girl: "Heaven's not a place, my dear; Heaven's being employed by the good Lord God."

A heaven indeed would this world be if all of us believed it.

Dolly of New South Wales

By Our Country Girl

A letter from Australia tells us that a good man in New South Wales has travelled 2000 miles on his pony Dolly, and sold a thousand sets of the Children's Encyclopedia.

THE reindeer of Father Christmas

Are rivalled today by you;
They sped through the dreams of children

All laden with red and blue;
With dolls and balloons and engines—

But even their cargo pales
Compared with the travelling bookshop

Of Dolly of New South Wales.

SHE carried, that valiant pony,
For over two thousand miles—

By curving of mighty rivers,
By scowling of mountain fies,
Through the bush by a zigzag passage

Where even the rough road fails—

The Children's Encyclopedia,
Did Dolly of New South Wales.

SHE brought to the lonely children,

Where never a school could be,
The learning of don and chemist

In studies across the sea,
And Italy's glowing pictures,

And Araby's magic tales;
She carried the verse of Shakespeare,

Did Dolly of New South Wales.

THE thinkers of ancient Athens,
The heroes of Marston Moor,

Arrived when the dusty pony
Pulled up at the farmstead door.

And now she may graze for ever,
While many a man bewails

He never spread so much knowledge

As Dolly of New South Wales.

A Boy's Thanks

FOR smooth green lawns that speed the ball,

And to the sporting spirits call
That comradeship that moves us all,

I thank Thee, Lord.

For games that have been made for me

To show the man that I can be,
And speed me on my way to Thee,

I thank Thee, Lord.

For parents good my thanks I send;
For comrades sure, the trusty friend
Who would uphold me to the end,

I thank Thee, Lord.

For these, for all there is in life,
The joy of nature that is rife,

The victor's day, the day of strife,
I thank Thee, Lord.

BERNARD WHITELOCK

Education Is

Correctness and precision in the use of the mother tongue;

Refined and gentle manners, which are the expression of fixed habits of thought and action;

The power and habit of reflection;
The power of growth; and

Efficiency, or the power to do.

NICHOLAS MURRAY BUTLER

UNCOVERING A BURIED CITY

POMPEII AS IT WAS IN THE DAYS OF CAESAR

A Walk Down a Street 1900 Years Old

REPLACING FALLEN TILES AND BEAMS

The dramatic burial of Pompeii by Vesuvius in 79 A.D. has been almost equalled by its dramatic resurrection, and some interesting new discoveries have been made of late.

Buried by torrents of lava, it remained for about seventeen hundred years a heap of hardened mud and ashes overgrown with grass. Later, in 1861, the Italian Government began to exhume the buried city in a scientific manner, and gradually its main streets, its forum, its temples, its theatres and amphitheatres, its houses and shops were brought to light, so that at the end of last century most of the city could be seen or imagined.

A City of Ruins

This early work of excavation was well done; but the city as laid bare was a city of ruins, and no attempt was made to reconstruct it.

For the last twelve years or so excavations have been very carefully carried out under the directions of Dr. Spinazzola. Layer by layer, earth and dust and ashes and stones have been removed, all masonry carefully preserved, and all moulds of objects in the ashes, such as doors and staircases, carefully noted. With the material thus collected and located, the excavators have succeeded in reconstructing the fallen buildings and in giving a quite new idea of Pompeii as it used to be.

Searching for Treasures

They have actually replaced the beams and tiles of broken roofs, and fitted together like a jigsaw puzzle fragments of the shattered frescoes of walls and ceilings. Hitherto it has been supposed that the streets of old Pompeii were forbidding and austere—that the houses, so to speak, turned their backs upon them, that a balcony overlooking the street was a very rare feature, and that windows were few and far between.

But the recent reconstructions have shown that the houses had numerous windows and loggias and balconies turned toward the street. Now we can walk down the streets and picture the women leaning out of the windows and some Romeo serenading his Juliet.

In the course of the recent excavations no treasures comparable with those formerly unearthed have been discovered, but some beautiful friezes and paintings have been revealed, and the very interesting fact has been shown that, after the great eruption, many of the inhabitants who had fled returned and dug down through the roofs of their houses and removed their treasures.

Pictures in the Home

If the structure of the houses in Pompeii shows the civilised character of the inhabitants, no less do their ornaments and decorations and furnishings. The house of Mr. Trebius Valens has a private bathroom heated directly from the range. The Armamentarium, where the city watch and the firemen had their headquarters, is suitably decorated with winged figures of Victory and two trophies—one a war chariot of the Ancient Britons. Another house has its dining-room decorated with poetry and exhortations, and the little rooms of the upper storey have beautiful paintings on their walls and ceilings.

The inhabitants, too, had gardens in which they evidently took pride, for they had their fish-ponds, and their marble fountains with lead pipes, and raised terraces and pergolas. As the excavation extends it throws more light on the character of the citizens, and there is still a third of the city whose secrets are yet to be laid bare.

A KING TRANSLATES SHAKESPEARE

THE King of Siam is a most enlightened monarch. Sometime ago he translated and staged *The Merchant of Venice* and *As You Like It*, and now he has staged at Bangkok his translation of *Romeo and Juliet*.

What a new and wonderful world the play must have opened up to the Siamese audience, for in Siam there is no romance of love, and marriages are arranged by old women who assort couples according to their birthdays and possessions.

It may be doubted whether the ordinary Siamese man and woman is

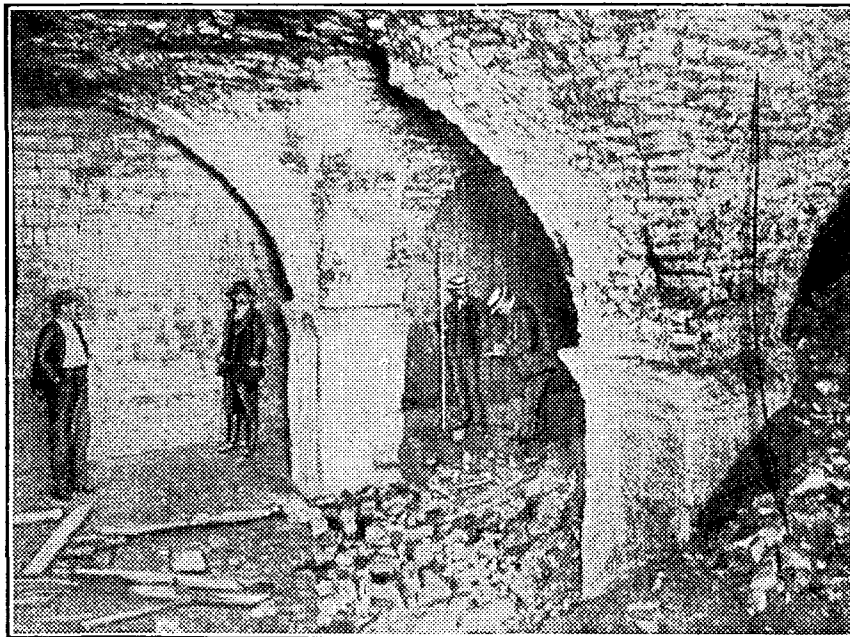
capable of appreciating Shakespeare, but the king certainly takes an understanding interest in the plays he translates, for he recently gave donations to the Memorial Theatre at Stratford-on-Avon and the Old Vic, and he wrote to Sir Sidney Lee: "I have been a devout Shakespearean ever since I knew enough English to read the poet. I have read all his works, every one of them at least twice, and several of them more times than I can remember."

We congratulate the Siamese on their king, and the king on his taste.

DIGGING UP THE ROMAN EMPIRE



A fine tessellated pavement unearthed at Colchester



Remains of a forum and baths found under ruined houses at Rheims

France and Britain contained many magnificent buildings when they formed part of the Roman Empire, and some exceedingly interesting and well-preserved remains, shown in these photographs, have recently come to light in both countries during digging operations

NEWS FROM EVERYWHERE

There are now a million more men in the armies of Europe than in 1914.

Prohibition for Ever

President Harding has told the United States that there is not the slightest chance of Prohibition being repealed, and the law must be obeyed.

An Expensive Meal

Cleopatra was reputed to drink pearls in her wine, but a cow has surpassed her extravagance by chewing up a pocket-book containing £200 in notes.

Binding the Sheaves

Two twine factories in Chicago have increased their production to 110,000 tons a year, nearly enough to bind the grain crops of the New World. Chicago makes enough twine every year to girdle the Earth 800 times.

A British steamer has just taken a curious cargo into Morocco. It consisted of two million gallons of drinking water.

Saving a Million Pounds

By linking together all the electricity undertakings of Greater London the Electricity Commissioners hope to save a million pounds a year.

Reaper and Thresher

A machine is now on the market in the United States which cuts and threshes grain in one operation, dumping sacks of the grain in piles of five.

Wanted, Half-a-Crown

The Shaftesbury Society, which cheers up the life of the poorest of the poor, wants a thousand pounds a week. Send it half-a-crown, to John Kirk House, 32, John Street, London, W.C. 1.

AMERICA COMING BACK?

TAKING HER PLACE AMONG THE NATIONS

Mr. Hughes Suggests a New Way to Get the World Straight

THE WAR DEBTS

A general feeling of satisfaction will be spread through the world by the news that the United States will rejoin the rest of the world in trying to find out ways by which nations may live together in peace and justice.

Mr. Hughes, the American Secretary of State, has produced a plan in which his country would cooperate with other countries in finding out how the world's debts can be arranged. He holds that Governments, most of them arguing for some national advantage, are not the best peace-seekers and business-doers.

It would be better, he thinks, if the greater Powers were to nominate expert financiers and economists who are not politicians, but are thinkers with wide experience, to suggest what debtor nations can pay and ought to pay for war losses. Then everybody would be better able to judge what is just and what is possible in the paying of war debts. We could all see which nations are disturbing the world by behaving selfishly or unwisely.

A New Hope Dawns

The world certainly needs such guidance as fairness and knowledge can give it; and some of the nations need badly an independent opinion about their own affairs. So the suggestion made by Mr. Hughes is quite sound.

Best of all is the fact that the suggestion brings the United States back into the counsels of the nations. The hope of peace and prosperity for the world depends on a feeling of unity among mankind, and that can never exist unless the United States takes her right place at the Round Table of reason and responsibility. For a time she has absented herself; and the world has been the poorer for her withdrawal. A new hope dawns when men of the type of Mr. Hughes begin to assert themselves as leaders in the world's politics.

TEACHERS AND THE COUNTRY

Fine Public Spirit SACRIFICE OF TWO MILLION POUNDS

The teachers of England and Wales have given up £2,000,000 of their salaries by their own will and judgment. By three votes to one throughout the country they have offered to surrender five per cent. of the salaries they have been receiving. It is a finely-offered sacrifice, and should be seen in that light by the nation as a whole.

The facts are that until recently teachers had been paid such inadequate salaries that there was difficulty in filling up their ranks, especially with men; but in the last few years increases have been considerable and rapid. This, combined with a fall in the cost of living, has left them with a prosperity perhaps greater than the country's average. Wages generally have fallen; most people are poorer than they were; and the country is deeply in debt. Under these circumstances what should the teachers do?

What they have done is to vote for a five per cent. reduction of their own salaries, so keeping more evenly in line with their neighbours' lessened prosperity. The broad effect of this sacrifice will be that the teachers will win from the country a new esteem. Personally the loss will be unpalatable, but as an act of public spirit it is fine, and in the end it will ensure a just reward.

LIFE-LIKE KINEMA IS IT COMING?

Figures That will Stand Out
as Real on the Screen.

STEREOSCOPE AND THE FILM

An invention seems never finished: it is always being improved, and now we hear from America of a new improvement of moving pictures.

We see objects in perspective, each in its position in distance, mainly because each eye sees the objects from its own particular angle. The two eyes, indeed, send the brain slightly different aspects of the same object, and the brain thus gets an impression of solid objects set at varying distances in space.

If by means of two photographs taken at different angles we send a different picture through each eye to the brain, the brain sees the two flat pictures as one picture with the objects standing out in relief like solid objects. That is the principle of the stereoscope.

Now the same principle is to be applied to moving pictures. Two pictures taken at different angles are to be flashed on the screen with great rapidity, one meant for the right eye and one for the left, and by means of a specially-made opera-glass, which shuts off the view from each eye alternately, the picture for each eye is sent to the eye for which it is meant.

Ghosts Out of Date

The result is that the picture on the screen becomes amazingly real, and all the objects stand out in relief like the actual objects in the world, almost deceiving the beholder.

This process, which is called the Televue process, was invented by two young graduates of Cornell University, and it is soon to be tried in a New York theatre. Later, no doubt, we shall have figures on the screen quite indistinguishable from real men, and if the gramophone is used to imitate human voices the illusion will be complete.

It reminds one of the story of the ancestor who stepped out of the picture-frame in the portrait gallery, and if this kind of thing goes on ghosts will be soon quite out of date.

BACK FROM THE BRINK OF RUIN

Austria Steadying Herself
THINGS IMPROVING ALL ROUND

One of the encouraging signs in European affairs is that, thanks to a united effort by half-a-dozen friendly States, stimulated by the League of Nations, Austria is steadying herself and is drawing back from the brink of bankruptcy and ruin.

Her money had lost practically all its value; but the loss has come to a standstill, and a turn for the better is starting, though very slowly.

Her crown has gone down until one English pound equals about 330,000 crowns. At that rate, how could she buy anything from anybody? She could not, for nobody wanted her useless crowns.

All the signs, however, show an improvement. The value of the mark has become steady, and people are therefore feeling confidence in buying. They have reason for believing that what they buy will not fluctuate rapidly in price and leave them with a loss.

Food, too, is becoming cheaper, and that is a hopeful sign. The State is economising and beginning to get rid of unprofitable servants. In short, there is a fair hope that if she is given time Austria will get back to sounder conditions, her trade will revive, and she will avoid the bankruptcy which a few months ago seemed bound to come.

SAVING A GREAT CATHEDRAL

Architects Fighting Time and Earthquake

HUGE CRACKS IN THE WALLS

The world is full of picturesque ruins, ruined palaces, castles, and cathedrals; but the time is not yet come for the New Zealander to sit on the ruins of London Bridge, and modern science is making vigorous efforts to save noble buildings from the ravages of time.

At Lincoln Cathedral today a great battle is being waged between Science and Time:

Scaffoldings veil the walls,
And dim dust rises, falls,
As, moving to and fro, their tasks the
masons ply.

The north-west tower is leaning like the Tower of Pisa; but not only does it lean—it gapes. From top to bottom and from side to side it has rents, some nearly a foot wide. Seven centuries ago it was shaken by an earthquake, and it has suffered ever since from shock.

Many times in the course of the intervening centuries it has been patched and cobbled, but the interior of its walls consists of rubble, and they have never been securely restored. Now the architects agree that the walls must be strengthened, and it is proposed to make them firm with liquid cement.

The walls are being drilled by a compressed-air drill, and into the drill-holes cement is being pumped, as a dentist might fill a decayed tooth. Already about 6000 gallons of the liquid cement have been pumped into the cracked walls, and 2000 cubic feet of space have been filled. Soon the north-west tower will be safe for a few more centuries at least; but there are dangerous cracks in many other parts of the building, and much more work will have to be done if the cathedral is to be preserved for posterity.

But if enough money is forthcoming the noble pile can certainly be saved. Time, even with the assistance of an earthquake, cannot defeat Science.

THE LONELY HOTTENTOT

Working to Pass a Holiday

A South African reader sends us the following illustration of the blank that occurs in lives in lonely places where there is no amusement.

One day a Hottentot, whose duty it was to keep the ground clean round the house, received a holiday.

In the evening of the holiday we were surprised to see him sweeping near the house, and asked him why he was occupying himself with his regular work.

"Of course I am only doing my work now," he replied. "Is it not my duty to clean up here early in the morning?"

The fact was that he had been sleeping through his holiday, and, wakening at night, could not face sleeping on all through another night. He had twelve hours of darkness to get through, and had nothing to do; so he was doing his work to tire himself in the hope that he might sleep again at night.

There was nothing whatever except the work for him to think about and do.

THE CRYSTAL FACTORY

Workshop Made of Glass

In Pennsylvania a factory is being built with outer walls almost entirely of glass. It will be six storeys high and 250 feet long.

It has been found to cost less to build a factory in this way than to build one in the ordinary way with yards of blind, blank wall. Not only is such a factory cheaper to build, but the better light produces better work, for it gives the workmen more health and vigour.

Such a glass building will, of course, be unduly hot in summer when the sun shines on the glass, but no doubt measures will be taken to mitigate the heat.

PAUL PRY IN THE PRESS

DABBLING IN SCANDAL

A Protest Against the Gossipy Books that Come and Go

RUBBISH AS HISTORY

By a Literary Correspondent

The two most eminent living English writers are Lord Morley and Mr. Frederic Harrison. They stand together a lonely pair. One is 84 and the other 91.

The elder, Mr. Harrison, is writing constantly to the Press, and everyone who loves books trusts that Lord Morley, notwithstanding what he said at the end of his last book, hinting that it would be his last, is writing quietly in his study what will delight us all again.

How dull it is to pause and make an end,
As if to be was life!

Frederic Harrison has often used his pen to make people pause to think, and now he has done this in a letter regretting that so many modern books are largely made up of gossip badly remembered—gossip, or chatty private conversations, never intended for everybody's ears.

A Gladstone Story

Mr. Harrison's protest will be felt by all old-fashioned readers to be badly needed. It has seemed of late as if numbers of people who have known interesting men and women had set themselves the task of recalling scraps of talk and opinions, and dressing them up in books as the real utterances of the famous dead. So little people of no great account win notoriety and a sort of fictitious importance.

It is an unfortunate fact that three out of four of the tales told about interesting people and the sayings recorded as theirs are not believed by wise readers.

Mr. Harrison gives from his own experience an illustration of how packed with error a little paragraph of literary gossip may be.

In twelve lines of print he tells how he once heard Mr. Gladstone say something amazingly unwise, even absurd. What Gladstone said to him was that in his opinion the third Earl Spencer was a greater man than Oliver Cromwell. Now, this Earl Spencer is described by one of his biographers as a shy, unambitious, tongue-tied man, but with blunt good sense, the passion of his life being for country life and sport.

The Evils of Gossip

Mr. Gladstone's opinion struck Mr. Harrison as so strange and curious that he several times mentioned it in conversation. Now, after so many years, what Mr. Gladstone said meets him again in the Diaries of Sir Algernon West, recently published, and in ten lines of print there are seven mistakes, not in opinion but in plain facts that can be tested, and are tested by Mr. Harrison, who shows them to be quite wrong.

Think of what history would be like if it were built up on such foundations as the baseless gossip which fills so many high-priced books today—books which soon run out their expensive hour and are sold at a few pence.

There is no doubt that modern book-making about Society talk and character is drifting toward scandal and rubbish. There is clearly a need for the serious minds of the Morleys and Harrisons to bring the book world back from casual gossip carelessly remembered and heedlessly recorded, or we shall have the School for Scandal transformed from idle talk into the blaze of print.

MOTOR POWER OF U.S.A

Motor-driven vehicles in the United States now have total power equal to that of 300 million horses, more than ten times the actual number of horses and mules in the country.

SQUADRONS OF FLYING FISH

HOW A SEA CREATURE SAILS THROUGH THE AIR

Fins that are Moved to Alter Speed

NOSE-DIVING INTO THE SEA

From a Professor's Chair

On a voyage to the Cape or India or America it is no uncommon sight to see flying-fishes rising from in front of the steamship's bows and skimming to either side high above the waves.

Occasionally one of them lands on the deck or dashes in at a port-hole. In some cases there is a swarm of these beautiful creatures. When the sun shines on them they look like big dragon-flies, and there is much point in what the Spanish novelist Ibañez says in one of his novels: "Before the prov hissed the silken wings of flying-fish, spread out in swarms, like little squadrons of diminutive aeroplanes."

Parachuting Not Flying

After much discussion most naturalists have come to the conclusion that in the ordinary flying-fishes of the sea the enlarged fore-fins serve as parachutes, not as wings. They may vibrate a little at first, and flutter a little afterwards, but they do not in the strict sense strike the air.

The impetus is due to strong strokes of the tail before the fish leaves the water, and it may be increased by the force of wind and wave. When the fishes sink to the surface of the water again they may lash out afresh with the tail and make another start without the body being immersed. They may repeat this performance at short intervals.

It should be noted that the muscles of the pectoral fins, though rather more developed than usual, are not very strong, and that in ordinary fishes the paired fins are not used for swimming, but for balancing the body.

Do Flying-Fishes Sail?

Some observations lately made by Dr. E. H. Hankin throw a fresh light on the aerial locomotion of flying-fishes. Much depends on the atmospheric conditions. In the Arabian Sea, on a very still evening after sunset, he noticed that the flying-fishes did not glide in the air for more than about a yard. They were also very liable to lateral instability, or side-slip. At other times, when there was sunshine and a light breeze, the flight extended for 200-400 yards. As with sailing or soaring birds, a breeze is essential for successful "flight." The fore-fins are often held flat. Sometimes they are slightly inclined upward.

Now, the soaring vulture has its wings in the "up" position for slow-speed flight and in the "flat" position for high-speed. In rare cases the fish had its fore-fins inclined very slightly downward, and this position is probably used for flight at the highest speed.

This is another fact which suggests that the flight of the flying-fish has something in common with the sailing or soaring of albatross and vulture. There may be flapping of the fore-fins at the start, but not after the fish has got well under way. A speed of over ten yards per second was observed, the fish keeping up with the ship for eight seconds. The maximum rate is probably about twenty yards per second.

Altering Speed and Height

By careful observation of species of flying-fish that have coloured hind-fins Dr. Hankin has been able to show how the fish checks its velocity, both in high-speed and low-speed flight, by altering the position of these fins. In one species that has the hind-fins small and far forward, therefore unsuitable for checking speed or for vertical steering, the fore-fins are drawn back through an angle of forty-five degrees when the fish reaches the limit of its flight, so that the fish makes a nose-dive into the water without altering its speed.

THE WEEK IN GEOGRAPHY

MOSUL

OIL CITY ONCE A FAMOUS CAPITAL

During the conferences that have been held between the European nations and Turkey to arrange a Peace by agreement, the town of Mosul in Northern Mesopotamia has been mentioned constantly.

We shall hear of it again, for it is an important place, commanding a valuable district near the border of Asiatic Turkey, and whoever holds it will have power over a considerable area.

The Treaty of Versailles entrusts Great Britain with a Mandate to control the government of that area, and Turkey keenly covets its wealth and fine position.

Ancient Walled Town

Mosul is on the River Tigris, 220 miles above Bagdad, an ancient walled town that was described a quarter of a century ago as crumbling into decay and losing its population.

But that account is no longer true. Its people dwindled in the geography books to 35,000, but now number 90,000, and the country area of government around, also called Mosul, has now passed 700,000.

The explanation of the increase in population is the discovery of the underground oil which all the civilised world needs badly. That is why Turkey is so anxious to go back there, and the English and French, who have acquired the oil rights, are determined that she shall not resume her unwelcome rule.

Centre of Trade Routes

Apart from the local wealth in oil Mosul would always retain considerable importance, for since the dawn of history it has been a centre of trade routes, from Asia Minor, from Baghdad, from the Caspian region, and from Persia. Through it, to and fro, has filtered part of the commerce between the East and the West, and presently it will be a railway junction.

But though its situation, as well as its oil supply, retains the world's interest, its present business appeal is weak compared with its historical fame; for Mosul is the ancient Nineveh, once the mighty capital of warlike Assyria.

Separated from it by the channels of the muddy Tigris are the shapeless mounds of earth that cover the palaces of great kings of long ago, whose names sound romantic in our ears—Ashurbanipal, whose library, of baked clay tablets, tells us of Mesopotamian history; Sennacherib, famed in Biblical history; and Sargon the conqueror.

City of Strange Sects

More than 4000 years ago, we can read in excavated records, Nineveh was known throughout the East as the place where the popular goddess Ishtar was worshipped long before Rome or Greece or Jerusalem existed.

Few places today preserve remnants of history as curiously mixed as Mosul. Though Mohammedanism has held the place in its grip for well over a thousand years there are still in Mosul Christian sects of which most of us have never heard, but which have had a continuous existence there almost from the days when the Apostles spread the faith throughout the East.

Nearer our day Mosul was a flourishing manufacturing town. The fabric muslin is named from it as the place where it originated. Again it will rise into solid importance, though not perhaps in manufactures, if it can be kept open to the free trade of the world and does not again fall into decay under the blighting rule of the unchanging Turk.

NEW WAY OF GETTING POWER

Novel Method of Using the Sun's Energy

ITALIAN ENGINEER'S INGENIOUS PLAN

The problem of utilising the direct heat of the Sun has exercised the ingenuity of many engineers, and numerous attempts have been made from time to time to utilise this energy for power purposes.

In America there are some queer contrivances for concentrating the Sun's rays in huge mirrors and boiling water with the heat. The steam is used to work a small engine. Appliances of this kind, however, are too costly and too inefficient to become of any commercial importance.

An Italian engineer has now come forward with a scheme based on an entirely different principle. He proposes to vaporise substances, like ammonia, that turn into vapour at very low temperatures.

His idea is to erect a turbine on the margin of a lake and circulate ammonia or a similar substance between a generator heated by the warm water drawn from the surface of the lake and a condenser cooled by the colder water drawn from the bottom.

The difference in temperature between the two layers of water would, it is estimated, range from ten to twenty degrees Centigrade. This is not a very wide range, but the inventor claims that the simplicity and cheapness of the plant would make the power produced of so small a cost that this would compensate for the lowness of efficiency.

He calculates that from the great lakes of Como and Maggiore, which in summer have a surface temperature of 23 or 24 degrees Centigrade and a bottom temperature of 6 degrees Centigrade, about 4000 million kilowatts might be generated in the four months from May to September at a cost of only one-seventh of a penny per kilowatt.

Applied to tropical lakes with higher surface temperatures the system would, of course, give even better results.

MUD HOUSES IN COLOUR

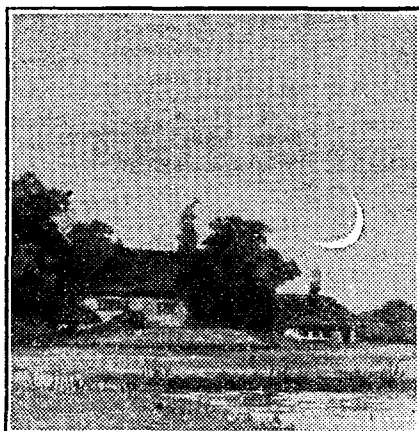
For a Brighter Ukraine

We are not surprised to find mud houses in Egypt, or Mesopotamia, or Abyssinia, but it is rather surprising to find whole villages of them in the new Republic of the Ukraine.

There is great lack of wood in that country, and French and German colonists who immigrated there some generations ago were obliged to make their bricks of mud and straw. The houses are spick and span, and are tinted blue, yellow, pink, or green, so that they have a bright and extremely picturesque appearance.

The colonists are mostly engaged in growing vines, and still speak their own language—French or German—and retain their old habits and religion.

THE MOON NEXT WEEK



The moon at 6 p.m. on January 19

C.N. QUESTION BOX

All questions must be asked on postcards, and not more than one question on each card. Name and address must always be given.

What Does Op. Cit. Mean?

It is short for the Latin opere citato, and means in the work quoted.

What is the Difference Between Plaid and Tartan?

Plaid is the shawl or garment, and tartan is the pattern denoting a particular clan.

Can a Horse See at the Side of Him?

The horse has large eyes that can be directed toward any object at the side or rear without a turn of the head.

Is the Mole an Amphibian?

No; it is a mammal, and lives on and under the ground. An amphibian is a creature like the frog, that lives partly on land and partly in the water.

Why are Englishmen Called John Bull?

John Bull was a bluff farmer in a satire called *Law is a Bottomless Pit*, or the History of John Bull, by Dr. John Arbuthnot, who died in London in 1735.

What is the Calculus?

A method of working out mathematical problems by means of a system of algebraic notation, invented by Leibnitz, the German philosopher. It is too complicated to explain here.

How Big is the Stomach of the Hippopotamus?

When extended it is about eleven feet long, and is capable of holding five or six bushels of food. The quantity of food eaten daily by the animal is enormous.

Is the Canary Found Wild?

Yes; it is found wild in most of the Canary Islands, but is specially abundant in Las Palmas, where it may be seen in great flocks at the breeding season. It is not the bright yellow of the domesticated bird, but is ashy brown on top.

Who are the Military Knights of Windsor?

They are a body of men associated with the Order of the Garter, and are selected from among deserving Army officers who have insufficient means. They receive a pension ranging from £50 to £130 a year, with quarters at Windsor Castle. Their duties are nominal.

What Was the Spray?

The Spray was a sloop in which Captain Joshua Slocum sailed round the world alone in three years. Essaying another voyage, he disappeared with the Spray, and neither has been heard of since. He may have perished or he may be marooned on some lonely and unfrequented island.

What is the Difference Between a Crocodile and an Alligator?

Crocodiles are distinguished from alligators and caimans by having no bony armour on the lower surface of the body, by the interlocking of the upper and lower teeth, and by the fourth lower tooth being received into a notch on the side of the upper jaw.

Do Solar Prominences Appear Before or After Sunspots?

There is a difference between the prominences found over the zones where sunspots occur and those found in other parts. The last-mentioned seem to be usually cloud-like masses. Those over sunspots are of an eruptive nature, and no doubt follow the eruption which causes the spot.

Why are Birds' Eggs Different Colours?

The colours and markings of eggshells are like the colours and markings of animals, birds, insects, and so on—for protection against enemies. They more or less harmonise with their surroundings and so become inconspicuous. How the animal is able to colour the shell and even vary it in different surroundings is not known.

Why Have Factory Chimneys a Rim Round the Top?

With a strong wind blowing on one side of the chimney a momentary vacuum is caused on the opposite side, and the smoke would be pressed down toward the ground by the air above. To prevent this a rim, or coping, is put round, and the smoke passes over this and is thus kept from coming downward.

NAMING THE STARS

COLOSSAL GLOBE OF HELIUM AND HYDROGEN

Distant Suns Called After the Letters of the Alphabet

HAVE SOME STARS LOST THEIR BRIGHTNESS?

By Our Astronomical Correspondent

In our survey of the stars of Auriga a brilliant gem will have been noticed almost midway between Capella and the sparkling group of Orion to the south.

This star, known as Beta in Taurus, is of second magnitude and was shown in our star map last week. It was placed in the constellation of Taurus by astronomers some thousands of years ago to represent the tip of one of the horns of the mythological bull Taurus. But were the stars arranged in constellations according to their actual relationship to each other Beta would be in Orion.

It is one of the enormous giant suns of the universe, so large that a minimum estimate makes it nearly four thousand times the size of our Sun, and between seven and eight thousand times as bright.

Analysing a Star's Light

Its heat is terrific, nearly 14,000 degrees Centigrade, which means that every square foot radiates twice as much heat as an equal area of our Sun.

An analysis of its light shows, moreover, that it is what is known as a helium sun, possibly entirely gaseous—a colossal globe of incandescent fire mist, at such a tremendous heat that its atoms are mostly converted into the lightest and simplest form, represented partly by hydrogen, but chiefly by helium. Nearly all the bright stars of Orion except Betelgeuse and Kappa are of this type.

Beta in Taurus together with these helium suns of Orion are known to be over six hundred light years distant.

On last week's star map two stars with the prefix Beta will have been noted—Beta in Auriga and Beta in Taurus. As some of us know, the use of similar prefixes is due to the method adopted by astronomers for indicating each individual star, but they would unite it with the suffix—that is, the name of the constellation—in Latin, as Beta Aurigae and Beta Tauri.

Faint Stars Known by Numbers

The prefix Beta is in each case the second letter of the Greek alphabet, and signifies, as a general rule, that the star is second in order of brightness in the constellation indicated by the suffix.

Gamma, the third letter of the Greek alphabet, would thus indicate third in order of brightness, and so on through the 24 letters of the Greek alphabet. But astronomers use the Greek letters themselves, and these letters are given and should be kept for reference.

α Alpha	ι Iota	ρ Rho
β Beta	κ Kappa	σ Sigma
γ Gamma	λ Lambda	τ Tau
δ Delta	μ Mu	υ Upsilon
ϵ Epsilon	ν Nu	ϕ Phi
ζ Zeta	ξ Xi	χ Chi
η Eta	$\omicron$ Omicron	ψ Psi
θ Theta	π Pi	ω Omega

The Letters of the Greek Alphabet

After these 24 letters are applied then the small Roman letters, like a and b, are used to designate still fainter stars, while finally numbers are used. But as these always refer to very small stars we need not consider them here.

It should be noted, however, that there are exceptions, and that the order of brightness does not always conform nowadays to their order in the alphabet, which seems to show that the stars themselves have in some instances increased or waned.

The brightest and most noted stars are popularly known by the names given to them in ancient times, such as Capella, Betelgeuse, or Rigel, which are also astronomically known as Alpha Aurigae, Alpha Orionis, and Beta Orionis. G. F. M.

THE HOUSE OF SILENCE

A School Story
With a Mystery

Told by T. C. Bridges
the C.N. Storyteller

CHAPTER 56 A Nasty Moment

MR. FLOWER stood looking down at them. There was a somewhat puzzled look on his big, strong face. At last he spoke again.

"Don't be scared," he said, with a smile. "Of course, I know my nickname. As a matter of fact, I am rather proud of it."

A huge weight rolled off Ray's heart. So, after all, Slogger had not heard. As the wind was making so much noise in the trees this was perhaps not wonderful. He forced himself to speak.

"It—it was cheek of us, sir," he said. "We—were talking about you, sir. But—but—" He stopped.

Slogger laid a big hand on his shoulder.

"But you'd rather not tell me what disrespectful remarks you were making about your Form master?" he said with a laugh. "Well, never mind. I'll forgive you."

The blood rushed to Ray's cheeks. He blushed scarlet. It was on the tip of his tongue to blurt out the whole truth, and beg the master to tell him what he knew about the matter. The only reason that he hesitated was on Jimmy's account. Knowing, as he did, that Jimmy was still in Slogger's black books over the cribbing affair, he felt he could not let him in for fresh trouble. And, of course, there would be trouble if it came out that Jimmy and he had been using the Old House as they had been all the term.

Before he could make up his mind what to do Slogger was speaking again.

"This is bad business, boys, about Mrs. Glennie's pearls."

"We had been talking about that, sir," said Jimmy, looking up suddenly in the master's face. "We wondered if it were someone in the school or outside."

Did Slogger start slightly? It almost seemed to Ray that he did. Ray's heart beat so hard that it almost choked him.

Slogger spoke quickly.

"Have you seen or heard anything that makes you think it is anyone in the school, Clayton?" he asked sharply.

"Flower! Flower!"

Quick steps crunched on the gravel, and there was Mr. Sharp coming up quickly.

Slogger turned.

"Yes," he said. "What is it?"

"Have you forgotten that you are dining with me tonight, and going to the Debating Society?"

Slogger said something under his breath which did not sound like a blessing.

"I did not know it was so late, Mr. Sharp," he answered, "but I will come at once. Good-night, boys," he said, and the two masters walked off together.

Bob Dane drew a long breath.

"Were you going to tell him, Jimmy?" he demanded.

"I—I don't know. I almost believe I was," replied Jimmy slowly.

"I wish you had," said Ray sharply. "I would have, only I didn't want to get you into a row."

"Row," repeated Jimmy scornfully. "The father of all rows would be jam compared with all this beastly hole-and-corner business."

"And you still think it's Slogger?" put in Bob breathlessly.

"I don't know what to think," said Jimmy, in despair. "I'd pretty nearly as soon suspect myself, yet Ray and I saw Slogger down by the Old House just before dark and just at the very time the thief must have been coming out of the Head's house."

Bob gasped in amazement.

"You're sure it was Slogger and not that disguised chap who nearly slew me the other day?"

"He was wearing Slogger's clothes," said Jimmy grimly. "Ray can swear to the suit."

Bob shook his head.

"It beats me," he said. "But you can't make me believe that old Slogger goes round priggish shillings out of chaps' trousers or bagging pearl necklaces from other people's bedrooms."

The other two shook their heads helplessly, and at that moment the bell for evening preparation rang.

CHAPTER 57 The Stained Suit

NEXT day, Friday, the school hummed with excitement.

A detective from local headquarters had arrived; he had searched the Doctor's house, he had interviewed all sorts of people, and thoroughly upset all the servants. Finally, he had gone away, saying that he had a clue.

"All rot!" growled Jimmy, meeting Ray in the box-room. "I don't believe the beggar has any clue at all." He only said so to keep his end up.

Ray shrugged his shoulders.

"I believe you're right, Jimmy. It's a horrid mix-up. I say, have you been down to your lab?"

"No, I didn't dare to with all this excitement on. I'll slip down some time this evening."

"I wonder if that detective chap has been in the place?"

"Phew! I never thought of that. What a joke if he were caught in the methylene dye trap!"

"Not much use to us if he were," said Ray. "Still, you'd better have a look. But he's not likely to have found your lab, because we always keep that passage door locked, and you have the key."

"Of course I have the key, and the door's bolted as well," said Jimmy. "I'm particularly keen to keep my show dark for a bit. While I was mixing that methylene I got on to a new stunt. Do you know, Ray, I believe I've found a new dye."

"Have you, by Jove? I say, that might be valuable, Jimmy."

"It might. Anyhow I'm going to try hard to work it out. Tomorrow is Saturday, and I shall go down in the afternoon and have a shot at it."

"I'll come along too."

"Better not," grinned Jimmy. "The place will reek. You'll be smothered."

"I'll look in, anyhow," said Ray, and then they parted.

It was not until tea-time that they met again. Then Ray saw by Jimmy's face that something had happened, and as soon as the meal was over the two hurried out of the room and away to the quiet corner of the Quad.

"Someone's been there," announced Jimmy. "I put a black thread across the window, and I found it broken."

Ray drew a long breath.

"Then someone has got the stuff on him."

"Absolutely certain," replied Jimmy emphatically. "Whoever he was he couldn't get in or out without getting marked."

"Then we shall find out who it is," said Ray.

"We ought to if it's someone in the school," was Jimmy's answer. "Keep your eyes wide open, Ray. Watch Arden particularly. I can't help thinking that he has something to do with it."

"Or Hogan," said Ray. Then an idea occurred to him. "But he's got to get wet first," he said quickly.

"It doesn't need much wet. Perspiration will bring it out on the

hand, and a slight fog like we've been getting lately would be enough to show the colour on a chap's clothes."

"All right. I'll keep a sharp look-out," Ray promised.

Next day turned out dull and misty, and by dinner-time it was so thick that a notice was posted that there would be no football that afternoon.

Ray was just leaving Hall after dinner when he met Slogger, who stopped him.

"Like a walk, Cartwright?" said the big man pleasantly.

"Very much indeed, sir," replied Ray, and meant it.

Indeed, there was no boy in the school who would have refused such a chance, for Slogger took them to all sorts of interesting places and always stood them a top-hole tea.

"Then get your mackintosh and meet me at the gate," said Slogger. "I'm asking Dane to come, too."

In spite of the fog the walk was most enjoyable. Slogger, who was wearing his old grey tweeds, took them through Saverton Forest, and they filled their pockets with hazel nuts and chestnuts. At four they had an early tea at a little roadside inn, with heaps of jam and cake, then they started briskly back so as to get home before dark.

Slogger led them by a short cut across country, and here and there were some pretty stiff fences to climb. Not that any of them cared, for they all had on old clothes.

When they reached the top of the hill above the river they struck a big bank with an ox rail on top.

Slogger sprang up the bank and took hold of the rail.

"Too long for even my legs," he said laughingly, and began to climb over.

Ray was just behind him. As Slogger raised one leg over the top of the fence, Ray suddenly noticed on the back of his right trouser leg a splotch of vivid violet, and above that again two or three smaller marks of the same brilliant colour.

He gave a queer strangled gasp, and Slogger heard him and turned.

"Why, what's the matter, Cartwright?" he asked anxiously. "You look as white as a sheet."

"N-nothing, sir," Ray managed to say, but for all that he felt as if his whole world had crumbled suddenly about his ears. Here was proof beyond doubt that Slogger himself had been in the Old Manor House since the dye was put there.

CHAPTER 58 Face to Face

THE cellar was full of queer fumes as Ray entered it, and Jimmy Clayton, in his shirt-sleeves, was boiling something in a fireclay pot over a blue oil flame.

"Jimmy," said Ray, but Jimmy did not look round.

"All right, old chap," he said quickly. "Can't talk to you for a minute. I'm just in the middle of it. Sit down a bit and wait. I won't be very long."

Ray dropped heavily on the old packing-case in which he kept his treasured violin. He felt suddenly fagged out. The walk itself had not tired him; it was the worry that had upset him.

If Jimmy had turned he would have seen how very pale Ray was, but for the moment he was so engrossed with his experiment that he could think of nothing else.

Ray sat quietly for a few minutes, but Jimmy never moved from his bench, and Ray saw that he was absolutely wrapped up in what he was doing.

And just then there came to Ray's ears a sound which was certainly not the hissing of Jimmy's retort. It was a sound of someone moving up above.

Like a flash Ray was up and off. Forgetting all his fatigue he went swiftly up the stairs, and stood just inside the locked door, listening hard. He was right. Someone was moving in the long passage on the

other side of the door, and the steps were exceedingly heavy ones.

Ray found himself shaking with excitement. This time at least there should be no mistake, and he resolved firmly that he would discover the identity of the mysterious visitant if it were humanly possible to do so.

The steps came nearer. They were so heavy that the old boards creaked loudly, and it flashed across Ray's mind that it might be wiser to go back for Jimmy. But this would take time, and the intruder, as Ray could hear by his footsteps, had passed the door, and was going away in the direction of the hall or the upper stairs.

At once Ray decided to take his chance alone, and, turning the key in the lock, he opened the door and stepped out into the passage.

By this time it was past five and very nearly dark. But a certain amount of light still came through the dusty windows of the passage, enough for Ray to see a man just in the act of pushing open the swing door leading out of the passage into the hall. He was a big man, wearing an overcoat.

Ray paused an instant, doubtful whether to run after him, or shout to Jimmy.

At that instant the man, who must have heard the door open, wheeled round and faced Ray. Then, without a word, he came running straight at Ray, and Ray saw that he had a heavy stick in his hand.

Ray remembered the brutal way in which this man had struck down Bob Dane. It was no use waiting for a similar fate to befall himself, so at once he ducked back through the cellar door on to the stairs, and slammed the door.

Next instant the man had reached the door, and Ray heard him growl with rage.

Ray thought discretion the better part of valour, and fled back down the stairs, three steps at a time. He heard the big man thundering after.

"Jimmy!" he yelled, "Jimmy!"

Jimmy had been so deep in his experiment that he had been quite unconscious of what was happening, and, the first he knew of it, here came Ray leaping off the stairs into the cellar and right on top of him, the big man brandishing a club.

Jimmy gave one jump to Ray's rescue, and in doing so upset his retort.

There was a roar like that of a double-barrelled gun exploding; the candles were extinguished, and Jimmy and Ray were both flung to the floor by the force of the concussion. As for Ray, he came down on his head, and that was the last he knew for some time to come.

TO BE CONTINUED

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Five-Minute Story

The Explorers

"WE must play the game properly," said Wilfred. "It's no use exploring our own garden because we know just what is in it."

Alice sighed.

"Of course it will be a real adventure," she admitted. "What are you going to pretend?"

"Shipwrecked sailors," said Wilfred, "cast on a desert island. We might sample those ship's biscuits when we reach the walnut tree."

"I thought it was a banana tree," retorted Alice briskly.

If she had to play this thrilling game she felt she had better do it properly. It was quite easy to believe old Watkin's potting-shed was a Waraboo wigwam. It was close and stuffy enough inside.

"Great discovery of native stores," chuckled Wilfred, dragging out a box full of tulip roots. "What are they? Onions?"

"I don't know," said Alice. "But I don't think they have onions on a desert island."

Wilfred did not reply. He had succeeded in bringing down a row of flower-pots with a crash.

"It must be dinner-time," said Alice. "The Manor dinner-bell is ringing. We ought to go."

"Can't be done," laughed Wilfred, "unless we make our escape by the lake in a tub. I say, though—"

The door of the native wigwam had closed with a bang. The key turned in the lock. Watkins, the Manor gardener, being rather hard of hearing, had not heard voices, within, and he always took the potting-shed key when he went home to dinner.

"Oh, oh!" wailed Alice, banging at the door. "And—and there was roast pork for dinner."

Even Wilfred's love of adventure-played-properly collapsed at that. But though they hammered at the door no one answered.

It seemed much longer than an hour before Watkins returned. Wilfred thumped the dingy panes of glass to hurry him up.

"Let us out!" he shrieked. Watkins stood still and scratched his head.

"If it isn't as I allus said!" the children heard him declare. "Some of them thievin' children in my shed. I'll learn 'em."

"Let us out!" yelled Wilfred. But Watkins had gone.

"He'll fetch a policeman," sobbed Alice. "And we shall be locked up. I'll never, never play explorations again!"

"Just like a——" Wilfred began to reply.

Then he, too, gasped, for Watkins had actually brought the Squire to see the prisoners.

After all, Squire Enwins was not as bloodthirsty as a Waraboo chief, and how he laughed when he heard Wilfred's explanation!

"I ought to roast you before a slow fire, eh?" said he. "Well, run off home as fast as you can. Sorry you've missed your dinner, but if you will come to desert islands, you know, you are lucky not to find yourselves being made into dinner for other people!"



Let Us Go the Happy Way



DI! MERRYMAN

FATHER was trying to read his paper, but every few minutes little Johnny demanded an answer to some question or other. At last father lost his patience.

"Now, Johnny, don't ask any more questions tonight," he said. "Remember, it was curiosity that killed the cat."

Johnny thought hard for a while, and then said:

"Dad, what did the cat want to know?"

WHY should a naval officer never put his chronometer under his pillow?

Because he should never sleep on his watch.

Changing Heads

I AM used in outdoor games. Change head each time, and I become a domestic animal; to consume; plump; a cover for the head; something found on floor or table; a plant and its seed; a slight rap; an animal that infests warehouses; seated; a large cistern. What am I?

Answers next week

No Reply

THERE was an old man with a poker, Who painted his face with red ochre;

When they said "You're a guy!" He made no reply, But knocked them all down with his poker. EDWARD LEAR

Do You Live Here?



What town does this picture represent? Solution next week

WHY is a man approaching a burning candle like one about to get off a horse?

Because he is going to alight.

A Quarrel Settled

THE kettle said, "You're very black!" The pot was cross and answered back,

"You say I'm black, well—what of you?" It boiled with rage; pots often do.

The kettle's voice rose loud and shrill, "I'm black, but you are blacker still!

How dare you fume at me? What next?"

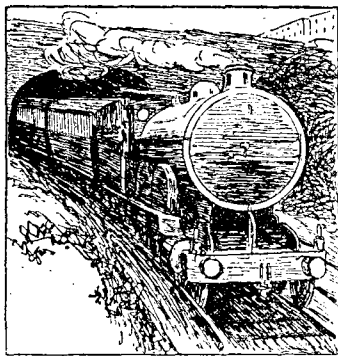
It spluttered, for it was so vexed. Then cook came running up to see. "They're boiling over, oh dear, me!"

She cried. "The stove is much too hot," And moved the kettle and the pot.

Then and Now



1823—The stage coach



1923—The express train

Is Your Name Grange?

GRANGE and Granger have nothing to do with a moated grange, but are derived from a French word meaning a barn, and probably the first owners of the name lived near a barn, had charge of one, or perhaps owned one.

Highroads to Health



Skating

WHEN is a woman like a newspaper article?

When she appears in print.

A Little Knowledge

THE oldest inhabitant of the village was entertaining his grandson with some wonderful stories of the severe winters that he had experienced as a young man.

"I remember one very bad winter," said the old countryman, "when it was so cold that the river here was frozen nearly solid, and the thermometer stood at fifteen degrees below Cairo, and—"

"Below what?" asked the boy. "Below Cairo. That's a very hot place in Egypt, and when it freezes there it's mighty cold, so they say that the temperature is so many degrees below Cairo."

"Oh, I didn't know that," said the boy. "I thought it was called Nero, after the man who fiddled during the Fire of London."

What Am I?

IN every hedge my second is, As well as every tree; And when poor schoolboys act amiss It often is their fee.

My first likewise is always wicked, Yet ne'er committed sin; My total for my first is fitted, Composed of brass or tin.

Solution next week

ANSWERS TO LAST WEEK'S PUZZLES

Arithmetical Problem

If half of two were three, a quarter of twenty would be fifteen.

A Riddle in Rhyme

Hay Transformations L=50. Tea-l, sea-l, pea-l, cow-l, bow-l

Who Was He?

The Lost Chief was Abraham Lincoln

Jacko Calls on the Doctor

FOR days after Jacko had succeeded in unknotting his tail he had such rheumatism in it that he could not get a wink of sleep.

Belinda said she had heard that bees' stings were good for rheumatism; but Jacko did not think much of that remedy, and went off to his Aunt Maria, who had had much experience of aches and pains.

Aunt Maria rubbed the tail with embrocation, and then wrapped it up in red flannel. But the treatment did not seem to be much good, for the pain continued just like toothache; so Jacko took off the red flannel, and put his tail in a sling, and tied a red ribbon round it to keep people off it.

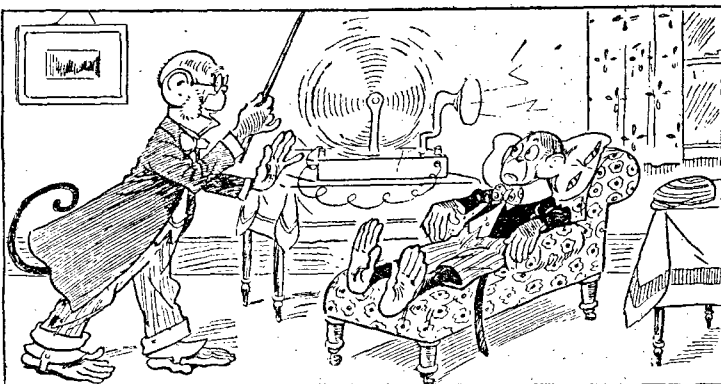
As day after day went on and the tail became no better, Jacko grew quite alarmed: he feared he might get a stiff tail, and a stiff tail is a fearful trial—much worse, though you may hardly believe it, than a stiff neck. So, without telling his father and his mother, he called on the famous doctor Sir Charles Chimpanzee.

Sir Charles inspected Jacko's tongue, and felt his pulse, and twisted his tail, and took his temperature, and told him to say ninety-nine. Then he looked very wise and very grave, and told poor Jacko that his tail must be cut off immediately; and off he went for a carving-knife.

Luckily Jacko retained his presence of mind, and while the great doctor was sharpening his knife, Jacko escaped up the chimney.

That gave Jacko such a fright that he had to go to bed for three days, where he was fed on chicken-broth, calf's-foot jelly, and beef-tea; but as soon as he was able to get up he decided to consult a doctor who carried out electric treatment and who had no carving-knives.

This doctor was much more hopeful than Sir Charles Chimpanzee, and said that though it was a very serious case Jacko



The doctor began to wave a black wand at him

might recover full use of his tail through electric treatment.

So the doctor put him on a long chair beside a funny, whirring, crackling machine, and began to wave a black wand at him.

Every time the black wand came near Jacko's tail a blue spark jumped out of it and went into the tail; and the tail gave a big jerk, and Jacko gave a big scream. But after half an hour's treatment the tail began to feel much better, and, when Jacko tried to move it, it was quite supple.

"Now," said the doctor, after he had finished sparking him, "you are almost cured, and all you need do is to say twenty times every morning: 'I am growing better and better every day in every way.'"

Jacko thanked him and promised to do so; but next morning he felt so well that he swung by his tail all day on an apple tree and ate twenty apples without once stopping.

The paragraph on the right is a French translation of the paragraph on the left

The Lunch-Time Donkey

There is a shady avenue in the north of London where mothers and nurses love to take their children every morning.

While the babies sleep or play in their perambulators, the mothers and nurses sit on camp stools and sew or read. They are never afraid of forgetting all about the time, or staying out too long, even with no watch to tell them the hour, for there is a donkey who occupies some stables near by, and punctually at half-past twelve he brays long and loudly; and at this signal the mothers and nurses know that it is time to pack up and go home to lunch.

L'Âne du Déjeuner

Au nord de Londres se trouve une avenue ombragée où les mamans et les bonnes aiment à conduire leurs enfants chaque matin.

Tandis que les bébés dorment ou jouent dans leurs voitures, les mamans et les bonnes sont assises sur des pliants en train de coudre ou de lire. Elles n'ont aucune crainte d'oublier l'heure ou de se mettre en retard, même si elles n'ont pas de montre pour leur indiquer l'heure, car dans une écurie du voisinage se trouve un âne qui, au coup de midi, braille longuement et vigoureusement; à ce signal les mamans et les bonnes savent qu'il est temps de plier bagage et de rentrer déjeuner.

Tales Before Bedtime

Favourites

JANUARY was Jacky's favourite month. "It's such a jolly month," he said. "We have presents, pantomimes, parties, and piles of snow."

"In August we have the sea-side, shrimping, and summer holidays," said Trixy. "August is the nicest month." And they argued about it until Jacky was quite cross.

When January came Trixy wouldn't say it was the nicest month, even when she had a lovely new Annual for a New Year's gift and Father took them to a pantomime.

"There haven't been any parties," she said, "and it hasn't snowed one snowflake."

"Wait and see, Miss Clever," said Jacky.

The next day an invitation arrived to a fancy dress party.

"I shall go as January," cried Jacky. "All in white, like Jack Frost."

"And I shall go as August," said Trixy, "with a big sun on my head and a dress covered with poppies and corn."

On the day of the party Jacky got up before it was light. "Why, it's snowing!" he cried. "Piles and piles of snow. How jolly!"

Trixy was pleased too, until Nannie came up and said, "If the snow goes on like this, Rogers will never bring out his wagonette and that old horse, and you can't go to the party."

It snowed and snowed until Rogers sent a message to say he could not drive three miles in such weather.

Trixy cried; and Jacky found it hard to be brave when he looked at his lovely, sparkling Jack Frost dress on the table.

Then, suddenly, there was



It was so snug in the car

the sound of a motor-horn, and up came Uncle Will in his car. When he heard about the party he said "Well, my horse doesn't mind snow! Get on your finery and jump in."

They were dressed in ten minutes, and it was so snug in the car that Trixy and Uncle Will couldn't feel cold, even sitting by Jack Frost!

It was a lovely party, and Jacky's and Trixy's dresses both gained prizes.

"There!" cried Jacky. "I told you January was the nicest month! We've had presents, parties, pantomimes, piles of snow, and—prizes!"

The Children's Newspaper grew out of My Magazine, the monthly the whole world loves. My Magazine grew out of the Children's Encyclopedia, the greatest book for children in the world.

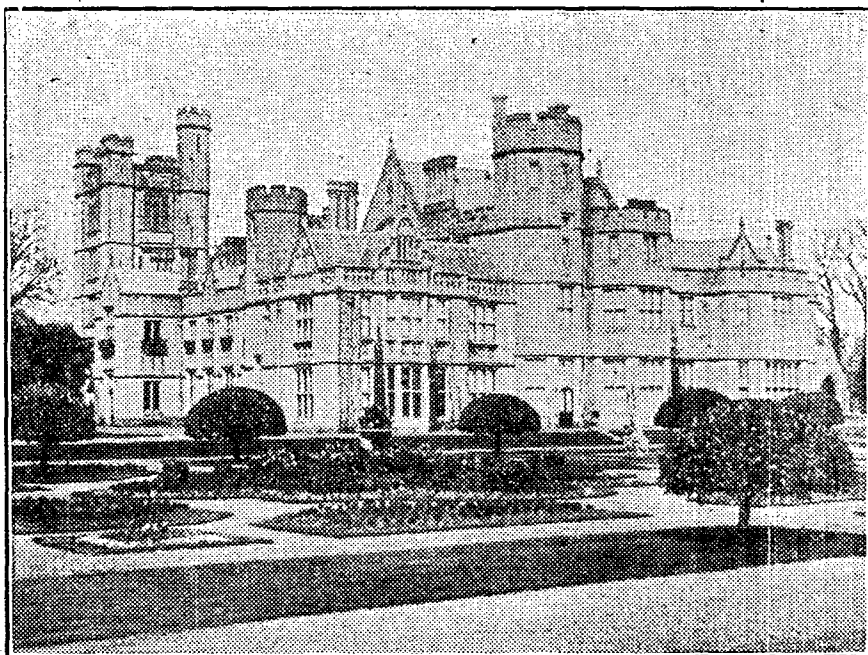
CHILDREN'S NEWSPAPER

January 13, 1923

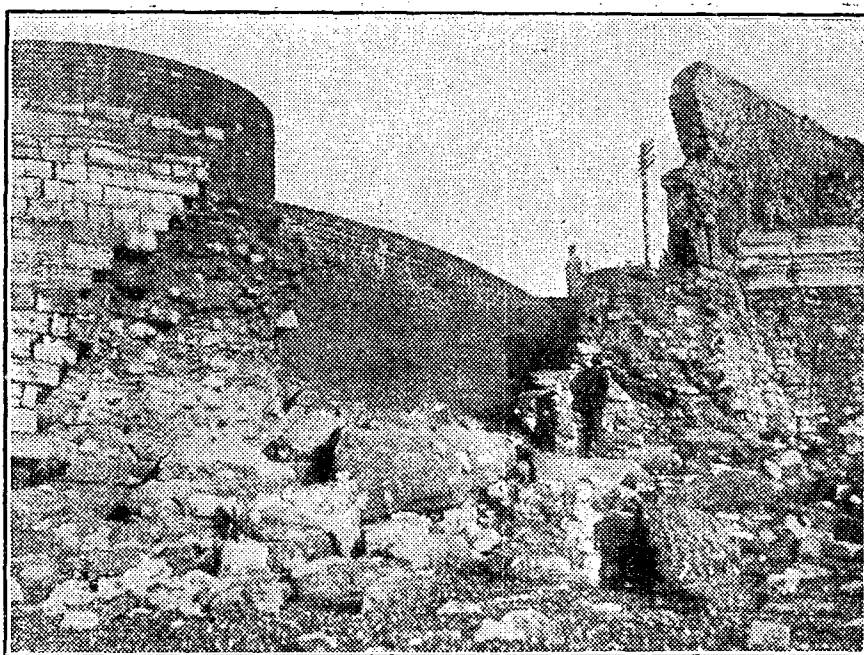
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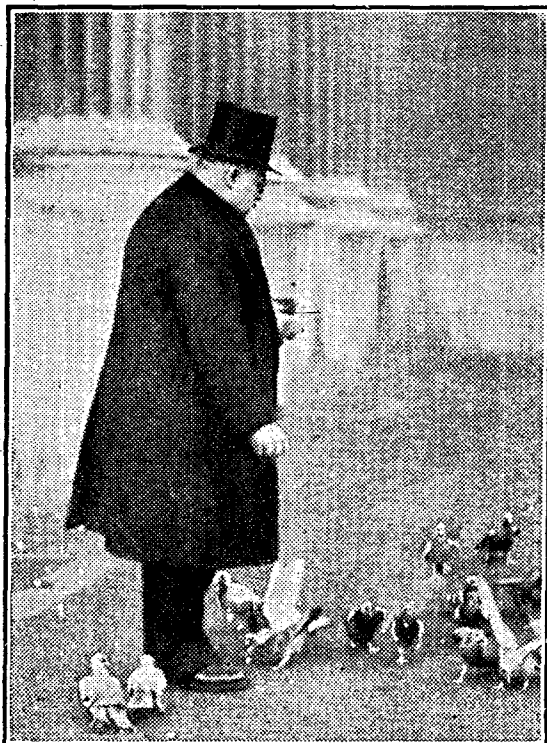
HAVOC OF THE GALE · SINGLE WHEEL MOTOR CYCLE · SURPRISE FOR THE ZOO



Stately Home for a Public School—Still another stately mansion has been sold for use as a public school for boys. Canford Manor, Lord Wimborne's Dorset seat, shown here, will make a magnificent home for a new school, which is to be started in the near future.



The Work of the Gale—Britain has been swept by heavy gales, and much damage has been done round the coasts to sea-walls and shipping. This picture of Sandgate Castle, taken after a recent gale, gives some idea of the power of the elements and the ruin they can work.



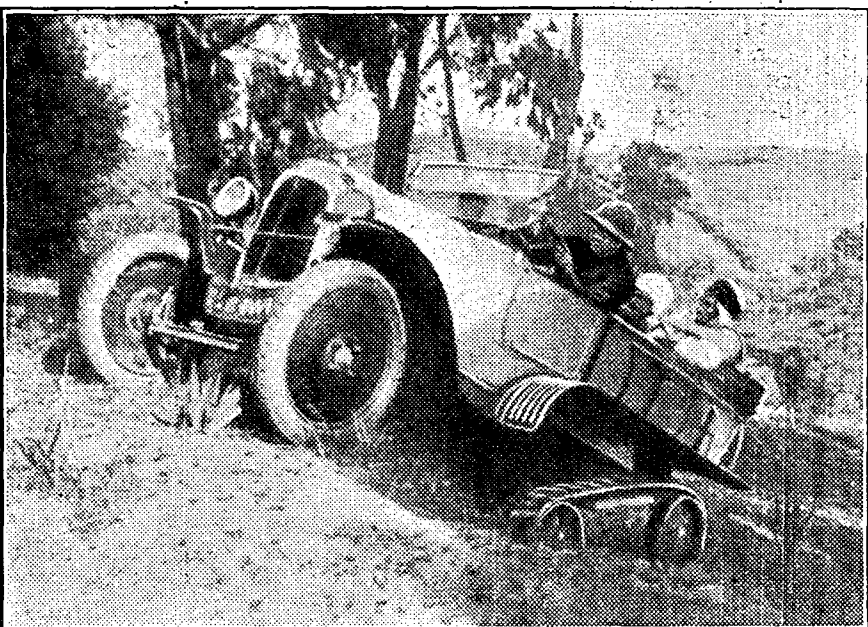
A Famous Egyptologist as a Bird Lover—Sir E. Wallis Budge, Keeper of Egyptian and Assyrian antiquities at the British Museum, feeding pigeons outside the Museum.



A Single Wheel Motor Cycle—This apparatus is a new motor cycle invented by an Italian, who is seen seated inside. It travels on one wheel, and is said to attain a very high speed.



A Surprise for the Zoo—A hamper that arrived at the London Zoo was found, on being opened, to contain a live monkey. It had been the pet of the Munster Fusiliers.



Motoring in the Desert—This is the car with the caterpillar back-wheels that is carrying French explorers across the Sahara Desert. The travelling is very difficult in many parts owing to great hills of shifting sand, and the dangers are many. See page 5.



A Kenya Football Eleven—C.N. readers have already heard of the school for Bantu boys at Butere, in Kenya Colony, and this photograph shows the football eleven with the enlightened Christian chief, Mulama, who acts as referee. It was through Mulama that the school was started.

ALL THE WORLD LOVES THE C.N. MONTHLY. ASK FOR MY MAGAZINE. EDITED BY ARTHUR MEE

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